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ORIGINAL ARTICLES.

THE CONDITION OF THE KIDNEYS WITH REFERENCE TO THE EMPLOYMENT OF DIURETICS.[1]

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HUCHARD has grouped from various sources the following indications for the employment of diuretics: (1) To maintain the action of the kidneys; (2) to evacuate fluid effusions; (3) to soothe and diminish irritation of the genito-urinary organs; (4) to modify the urine and prevent formation of calculus; (5) to exert a derivative effect through the renal passage; (6) to hasten elimination of toxic substances from the organism.

It may be said that diuretics are of little if any avail in removing inflammatory effusions or procuring absorption of chronic effusions, such as ascites and hydrothorax. Hence the main objects to be attained through their action are the maintenance of renal function, dilution of the urine and removal of edema. Diuretics exert their physiological effect upon the kidneys in several ways. Brunton's simple classification divides them, according to their mode of action, into diuretics which act upon the blood, those which act upon the circulation, and those which act upon the tubules of the kidney. The first of these classes—those which act upon the blood—includes the saline or refrigerant diuretics, chief among which are the vegetable salts of potassium and the salts of lithium, sodium, and strontium. Since the main office of the kidneys is to depurate the blood, we would naturally expect them to be influenced in their function by slight changes in the composition of the blood and such we find to be the case. This fact explains the diuretic action of water and of the class of saline diuretics. It has been shown that the power of these latter bodies to induce urinary secretion is directly proportional to their power of attracting water, and that the result of their presence in the blood is to cause an active flow of water from the tissues into the blood which in this way becomes diluted to an extent varying with the osmotic pressure of the substance introduced. In other words, hydremic plethora is induced with dilatation of the visceral blood-vessels and general rise of blood-pressure with increased rapidity of flow. The diuresis resulting from these substances lasts no longer than the hydremic condition and increased blood-pressure and ceases when only a small amount of the drug has been removed. The fact that the increased urinary flow does not persist until entire excretion of the body is accomplished shows that these substances are not specific stimulants of the renal function, but act indirectly through increasing the volume of the blood and raising vascular tension.

The effect of the second class of diuretics—those which act upon the circulation—is rather more complex, but in the end is much the same as the preceding class. They may be designated the cardio-vascular diuretics and include digitalis, strophanthus, theobromine, convallaria, adonis vernalis, sparteine, caffeine, and the cardiac stimulants generally. Their diuretic effect is accomplished by their influence in producing increased pressure in and flow through the glomerular capillaries.

The action of digitalis may be taken as typical of this class. Digitalis slows and strengthens the cardiac systole and at the same time constricts the arterioles so that blood-pressure is raised thereby relieving venous stasis and bringing about improved circulation through the kidneys. It is, perhaps, the most generally useful diuretic, being especially valuable in dropsy associated with cardio-asystolic conditions. With a normal heart its action upon the kidneys is extremely doubtful. Its effect upon the urinary secretion in health has been carefully studied by numerous observers, but with such diverse results as to render it probable that its diuretic action is in great measure indirect rather than direct.

In connection with the circulatory diuretics may be mentioned the action of the vasodilators. These drugs, principally nitrites and iodides, act by dilating the renal capillaries and so moving more blood into the kidneys. At the same time general blood-pressure is lowered. In this manner diuresis is effected by substituting vasodilation for vasoconstriction, which is the dominating factor of diuretic medication.

Diuretics of the third class act upon the secreting structure of the kidneys so as to increase its function. They are mainly renal irritants, their action upon the kidneys being compared by Brunton to the action of drastic cathartics upon the intestine. In small doses they produce diuresis by stimulation of function, while in large doses they give rise to severe irritation and even inflammation of the kidneys. The most important members of this group are turpentine, juniper, squills, copaiba, cubebs, cantharides. Calomel and blue mass may be mentioned as diuretics which do not belong to any one of the foregoing classes. They are indirectly diuretic, probably through their influence upon the liver resulting in the formation of substances which are diuretic in action. Some of the diuretics pro-

[1] Read at the annual meeting of the Illinois State Medical Society, Peoria, Ill., May 22, 1901.

duce their effect upon the kidneys by acting simultaneously in more than one way. Thus, caffeine, theobromine and squills are at once cardiovascular diuretics and stimulants of the renal epithelium.

The facts passed thus lightly in review regarding the action of these drugs develop the interesting conclusion that only a comparatively few of them are true renal diuretics. It is only in the case of the third class of irritant-epithelial diuretics that the renal function is increased by direct action of the medicament upon the kidneys. All other diuretics exert their effect upon the urine, indirectly through the circulation, either by raising blood-pressure through improved cardiac action, or by inducing a watery condition of the blood with coincident heightening of vascular tension.

In acute irritative and inflammatory conditions of the kidneys, a state of physiological rest is indicated and for this reason drugs directed toward increasing the urinary flow should not act directly upon the kidneys, but indirectly by stimulating cardiac action, raising blood-pressure or producing vasodilation. For this reason the irritant epithelial diuretics should never be employed in inflammatory diseases of the kidneys. It is well known that diuretics often fail of action when their effects are most needed. This is not because they are inconstant in their action, but because of unsurmountable obstacles which frequently are opposed to their action and as well because they are often administered without a proper appreciation of the indications of the particular case. Thus, in cardiac disease, the kidneys may be so engorged as to render secretion impossible and in advanced Bright's disease diuretics may be powerless because of extensive destruction of the secreting cells. It is well to bear in mind that, when the function of the kidneys is impaired, it is prudent to use medicines having toxic properties with extreme caution. This applies to many of the diuretics, especially the cardio-vascular diuretics and calomel. When the impermeability of the organs has advanced to the point where systemic waste and toxins are retained, medicinal substances may also fail of excretion and drug intoxication may be added to uremic poisoning. It should also be remembered that there is a marked antagonism between the function of the bowels, skin and kidneys, so that great activity of one of these emunctories lessens secretion by the others. For this reason, when diuresis is desired, sweating and purging should be avoided. After a diuretic is administered, the patient, as a rule, should be kept cool. A drug administered for diuretic purposes may, if given hot and the patient kept warm, act as a diaphoretic.

Diuretics are employed in functional and organic derangements of the kidneys. In functional urinary disorders they are mainly used to dilute the urine and correct undue acidity and thus soothe and diminish irritation of the urinary passages. To accomplish these results nothing is so well adapted as simple diluents or the class of saline diuretics. There is no doubt that, as a class, Americans do not drink enough water and consequently are liable to concentration and undue acidity of the urine, with irritation of the urinary organs and disposition to the formation of crystalline concretions. We know that organic disease is frequently the result of prolonged functional irritation of an organ.

I have felt satisfied that in a number of my cases of chronic interstitial nephritis in middle-aged subjects the underlying cause has been prolonged irritation of the kidneys from an overacid, concentrated urine, the result of insufficient water-drinking. Herein is one reason for the popularity of the so-called "lithia waters" and, although one may feel some skepticism regarding the efficacy of the lithia they contain, they serve a good purpose by inducing consumption of a water with supposed medicinal properties in cases in which plain unsophisticated water would fail to enlist the patient's interest. At this point a word might properly be spoken in warning of the evils of overconsumption of water in organic kidney disease. It is customary to direct patients with chronic kidney disease to partake freely of water. Unless some limit be placed upon this unquestionably good hygienic measure, the patient may apply himself too freely to the practice, and as a result pass habitually from eighty to one hundred and twenty ounces of urine. The congestion induced in the glomerular circulation by this state of affairs may cause decided harm to the organs. In a number of my cases increase of albuminuria and blood in the urine have resulted.

Whether any of the medicinal diuretics possesses the power of dissolving urinary concretions is doubtful, but there can be no question of the efficacy of freely diluting the urine by means of diluents and diuretics, in preventing their growth and formation, and in relieving the irritation they produce.

In the various forms of nephritis, diuretics are much employed. Before considering their value in this disease, a word might aptly be said in deprecation of the tendency to give diuretics without due reference to the indication of the particular case. Many physicians apparently regard the presence of organic kidney disease as sufficient reason for diuretic medication, and potassium, strontium, digitalis or even the irritant diuretics are administered, often to the distinct detriment of the patient. It is about as reasonable to give diuretics in this indiscriminate manner as it would be to administer cardiac stimulants to all cases of organic heart disease, without reference to the state of the cardiac muscle. Diuretics should only be given in Bright's disease in response to definite indication.

In acute nephritis we have a much more promising field for the employment of these agents than in chronic nephritis. In cases of acute nephritis attended with oliguria and dropsy our endeavor must be to relieve as far as possible all strain upon the engorged capillary system of the

glomeruli, so that the organs may resume their normal function. Any attempt to stimulate renal action and to reduce dropsy during the acute inflammatory stage is apt to meet with disastrous consequences by throwing work on organs incapable of bearing the strain. It is important, however, to maintain the function of the kidneys. Indeed, it becomes a condition of life that quantity of urine should make up for quality. This must be accomplished without imposing any strain upon the diseased organs. During the stage of acute inflammatory engorgement a free urinary flow is best favored by the liberal use of water, either plain or with one of the vegetable salts of potassium, added in sufficient amount to render the urine alkaline. Certain authorities (Ewald, Cantani, Labadie-Lagrade) reject the administration of all diuretics at the commencement of nephritis, but Furbinger, Leyden, Gairdner and others contend that saline diuretics are absolutely harmless even when nephritis is in full swing. I am sure that general experience is in conformity with this latter view. It has been affirmed that the salts of potassium increase uremia, but confirmation from practical experience is lacking on this point. Unfortunately, these drugs may prove very distasteful to the patient and give rise to nausea and vomiting. They should be withheld at the earliest sign of digestive disturbance.

Gerhardt, Coignard and Purdy contend that alkaline urine dissolves the fibrinous exudations which plug the tubules, a contention which has been verified by Cantani. This action is one of the most valuable attributes of the saline diuretics and serves to greatly facilitate the function of the embarrassed kidneys by clearing the tubules of inflammatory products. Sir William Roberts states that in no instance in which the urine had been rendered alkaline during the first week of the complaint had he observed the more severe uremic symptoms and secondary inflammations.

When the oliguria is great and uremia threatening, resort should unhesitatingly be had to the subcutaneous injection of normal saline solution. The solution should be freshly made and freshly sterilized and should be slowly injected at a temperature of 100° F. into the buttock or cellular tissue of the breast. One quart every six to eight hours should be given until the kidneys respond, or instead a pint may be injected every three hours. The immediate effect of the introduction of these large quantities of saline fluid is to relieve vasomotor constriction probably by diluting the toxins in the blood and to stimulate the heart's action, thereby raising general blood-pressure and favoring elimination by the natural channel. I know of no measure so effective in bringing about copious diuresis. The effect upon the kidneys is frequently most remarkable. It may require several infusions to produce any important effect, but when diuresis begins it is often extremely free and lasting. High enemata of hot normal salt solution may be used instead of the subcutaneous injections, but they are not nearly so effective. When the disease has passed into the subacute stage with abated fever and subsidence of the interstitial and parenchymatous inflammation in the kidneys, theobromine may be administered if a diuretic seems indicated and the salines prove ineffectual, or if persistence of edema suggests its dependence upon atony of the cardiac muscle, digitalis may be resorted to.

In chronic renal diseases, the indications for the employment of diuretics are to maintain the urine and thus assist the elimination of urinary and other toxic bodies and to remove edema. In chronic interstitial nephritis polyuria and not oliguria prevails and, consequently, no service can be expected from diuretics, nor is their use at all necessary until the stage of cardiac failure is reached. With dilatation of the heart and lowering of systemic blood-pressure, diminution of urine supervenes and dropsy develops. Appreciation of the fact that dropsy and oliguria are due to the circulatory failure indicates the futility of giving diluent and saline diuretics, or expecting results from any measure not directed toward restoring cardiac action and raising the general blood-pressure. Digitalis is the drug indicated and favorable results upon the urine may be expected from its employment, especially if vasodilators be simultaneously administered to unlock the arterioles and thus neutralize the constricting action of the digitalis. Strophanthus, caffeine, sparteine, convallaria and theobromine may be employed in place of digitalis, but they are much less reliable. When the renal impermeability is advanced, the influence of digitalis and other diuretics is doubtful and we should proceed in their administration with the utmost caution.

In chronic diffuse nephritis the quantity of urine varies inversely as the amount of dropsy. Diminution is the rule, although a considerable temporary rise may be seen during the period of subsidence of the dropsy. Saline diuretics and diluents will consequently serve useful purposes by increasing the urine and flushing the renal tubules. The usefulness of digitalis and the cardio-vascular diuretics will depend upon the condition of the heart and systemic blood-pressure. In the engorged or cyanotic kidney subsequent to serious circulatory derangement, the cardio-vascular diuretics and especially digitalis are the only ones to be considered. It is in these cases that calomel exerts most strikingly its diuretic effects. Digitalis may be given alone, or in combination with squills and blue mass, if the kidneys are free from organic disease. A valuable combination is digitalis and bitartrate of potassium, as is also digitalis, strophanthus and acetate of potassium.

Finally, regarding the usefulness of diuretics in renal dropsy. The factors entering into the production of renal dropsy are both circulatory and hematic. The circulatory condition probably consists in undue permeability of the capillary wall, allowing the outpouring of large quantities of fluid into the lymph-spaces. The capillaries, although not muscular, have been shown to be

contractile and it may be presumed that they offer increased resistance to blood abnormal in character from the presence of toxin which the diseased kidneys fail to excrete. This involves increased intracapillary pressure and with it must be associated some change in the capillary walls which renders them unnaturally permeable. With these changes in the vessel-walls is associated a true hydremic plethora of the blood. Not only is the blood poor in solids, but the volume of the fluid is increased. These factors operating together cause the dropsy of acute renal disease. Their primary cause is undoubtedly the toxemia due to the kidney lesion. Notwithstanding the fact that the flow of urine varies inversely with the amount of dropsy, the oliguria is probably a result rather than a cause of the dropsy. This view of the production of dropsy does not hold forth a very hopeful prospect to the administration of diuretics. In fact, the action of these agents in renal dropsy is very uncertain, owing, no doubt, to the different conditions accompanying acute and chronic renal disease. Dropsy in acute nephritis is usually of purely renal origin and consequently is very little amenable to favorable influence by diuretics.

In chronic nephritis the problem is essentially different. The increased capillary resistance just referred to, which is produced by the presence of toxins in the blood, involves increase of arterial tension and of cardiac effort to overcome peripheral obstruction. When renal disease is of very gradual development, as in many cases of chronic interstitial nephritis, and the heart has been allowed time to hypertrophy, gradually, with the rise of tension, dropsy is postponed or may be altogether absent. If the patient survives to the last stages of the disease, the cardiac compensation gives way and dilatation with mitral insufficiency supervenes. Under such circumstances dropsy develops and may be regarded as more cardiac than renal. As dropsy of cardiac origin is much more easily influenced than that due to purely renal causes, a better field exists for the employment of diuretics, especially the cardio-vascular diuretics in the dropsy of chronic nephritis than in the acute disease. The latter form of dropsy must be combated by measures directed toward the promotion of excretion by other channels, especially the skin and bowels.

Conclusions.

1. Except in the case of the irritant-epithelial diuretics (turpentine, cantharides, etc.) the entire class of diuretics may be said to exert their effect upon the urine by acting indirectly through the circulation.

2. Owing to the necessity for sparing the kidneys all irritation, drugs given for diuretic purposes should act indirectly rather than directly, consequently the secretory diuretics are contraindicated in irritative and inflammatory renal conditions.

3. In functional urinary disorders diuretics are mainly useful to overcome concentration and hyperacidity of the urine. To accomplish this, simple diluents and salines are best adapted.

4. In acute nephritis saline diuretics are permissible throughout the entire course of the disease and exert a beneficial influence by increasing elimination and clearing the tubules of inflammatory débris. Subcutaneous saline infusion constitutes our most powerful eliminant in desperate cases.

5. In chronic nephritis the cardio-vascular diuretics are most useful, owing to the fact that oliguria and dropsy are usually the result of circulatory failure. The dropsy under such circumstances, being of cardiac origin, may be benefited by cardio-vascular stimulants provided the kidneys are not too badly damaged.

6. Dropsy of purely renal origin is not amenable to favorable influence by diuretics.

7. Although the morbid process in the kidneys may furnish us with our primary inspiration to diuretic medication, it is the condition of the heart and circulatory apparatus in most cases that determines the choice of an agent.

THE THERAPEUTICS OF SUBACUTE AND CHRONIC HEART DISEASES.[1]

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NOTWITHSTANDING all of the recent advances in cardiac therapeutics (and the changes of the last ten years have been revolutionary), we are less and less disposed to advocate special remedies for special affections. This is particularly true when the valves are at fault, for we have learned to put less weight on abnormal sounds and more on attendant phenomena, and especially on the character of the tissues about the valves. A few statements that I believe will be admitted without controversy by those who have made a study of heart diseases will serve to illustrate my meaning.

The gravity of a valve lesion is not always measured by the intensity of its murmur. A loud and harsh murmur is not incompatible with an average length of life; whereas a valve may be almost occluded as in mitral stenosis, without giving any recognizable auscultatory sign.

A loud murmur in recent endocarditis may mask an older and much more serious lesion, simply because in one the edges of the valve are smooth, and in the other, rough. The maximum intensity of a murmur is not always best heard over the area that our text-books designate as the proper point for auscultation, for an aortic direct murmur can sometimes be best heard over the pulmonary area, an aortic regurgitant murmur, over the mitral area.

Single valve lesions are the exception not the rule.

With the best opportunities and the largest experience one may not always be able to distin-

[1] Read at the Annual Meeting of the American Therapeutic Society, Washington, May 8, 1901.

guish between a functional and an organic murmur. Obstruction of any valve is usually associated with insufficiency.

Now, facts like these are plainly bars to a correct diagnosis derived from purely auscultatory signs; and from our present view they appear to be insuperable. As a result, the clinician of to-day realizes limitations in the value of purely auscultatory signs, and only utilizes them in connection with other signs. And so if he recognizes aortic obstruction, and does not note insufficiency, he still mentally adds to his diagnosis a probable insufficiency, because the two usually coexist; certainly if the obstruction has reached an advanced stage there is almost inevitably regurgitation. But even if the physician has abundant opportunities and the requisite experience he may still sometimes fail to locate an affected valve. A few figures will illustrate this point.

In 46 cases of mitral insufficiency from my hospital postmortem records 34, or 75 per cent., were correctly determined during life, though in 39, or 86 per cent. of them, other valve lesions were present to complicate matters. An accuracy of 75 per cent. is a creditable showing. In sharp contrast, however, is the record in mitral stenosis. From 27 cases the following results were obtained: The lesion was not noted at all in 19, or 70 per cent.; the signs were not heard or misinterpreted in 4, or 15 per cent.; the signs were heard and correctly interpreted in 4, or only 15 per cent. In 18 or 66 per cent. of these cases of stenosis there was insufficiency.

These figures certainly indicate, as I have said, that in the majority of instances a single valve lesion is complicated with one or more; and therefore therapeutics founded on the action of a drug in a supposed case of pure mitral stenosis or pure aortic insufficiency, for example, are illusory, in that we are probably not dealing with a single lesion, but with two or more. One should, therefore, be skeptical when he reads that a remedy is adopted for mitral stenosis, but not for mitral insufficiency. In fact, it is a matter of minor consequence, so far as treatment is concerned. what the precise valve lesion is, while it is vitally important to determine whether the disease is acute or not, the heart hypertrophied or dilated, the character of the pulse, and attendant symptoms relative to implication of other organs.

And yet such ideas as this are prevalent, that, with a pulse of say 50 or 120, the rate must be brought to a given standard; or so long as we hear a loud murmur or find an intermittent pulse, the heart must be at once stimulated with cardiac drugs, and in many cases the unfortunate patient is subjected to a course of drugging that is useless if not harmful.

Let us note here that the newer methods of treatment consist in rest, alternating with bodily activity; determination of the blood to the periphery rather than venesection; a carefully regulated diet, with stomachics if necessary. In place of the so-called heart-tonics or stimulants which we now employ, systemic invigorants or alteratives, with or without mild cardiac sedatives, should be given, reserving the so-called cardiac or circulatory stimulants and hydragogue cathartics for emergencies which may arise from complications, such as pneumonia, advanced Bright's disease, diabetes or abdominal dropsy, where we either have abandoned hope or are merely aiming to sustain life (as in lobar pneumonia) during a brief period of cardiac strain. Of course, I do not desire to disparage rest. It has its value for every wearied organ, but complete rest from all bodily or mental activity has a limited value in the treatment of heart diseases and is applicable, only in cases of acute dilatation, with or without endo- or pericarditis, in some perenchymatous affections, or in the last stages of chronic heart disease. In fact, as soon as the immediate danger from any serious heart disturbance is over, active or passive bodily movements should be inaugurated, for enforced rest superinduces degenerative processes and retards the physiological activities necessary to rid the system of effete material.

It seems almost absurd to discuss the matter of venesection in heart disease, for it is hardly known in our latitude; yet it is recommended in two prominent American text-books which have appeared within the past ten years. In a practice of more than thirty years I do not remember ever to have known of its use in heart cases, although I have venesected for the vertigo of plethoric people, in cerebral congestion and in orchitis, and have quite often used wet cups in the sthenic pneumonia of robust young people, and have had no occasion to regret the practice. But in cardiac cases, local derivation by dry cups, frequently resorted to, fulfils all the indications, when we are aiming to relieve the right heart. In chronic pulmonary engorgement, however, carbonated baths and resistant exercises do the work best by determining the blood from the internal viscera to the muscles and integument.

So much for intracardiac pressure. Diminution in the extracardiac pressure, another important matter, is also accomplished in some instances by remedies that are mild but effective. A restricted diet in which the ordinary amount of nitrogenous food is somewhat increased and the carbohydrates decreased, lessens fermentation and so diminishes gaseous distention of the stomach, thus preventing this form of pressure on a distended heart. Inasmuch, however, as the carbohydrates supply energy to the system they should not be forbidden altogether. In delicate cases the use of malted foods containing predigested starch is helpful. It is apparent, therefore, that a mixed diet is preferable. In the matter of fluids, inasmuch as lithemia is at the back of most chronic heart diseases, they should be used freely as solvents for uric acid, if not for any

other purpose, and, as most of these patients lead somewhat sedentary lives and suffer from indigestion, we cannot overlook stimulants and antifermentatives for the gastro-intestinal tract.

I do not propose to discuss here the carbonated-bath systems, and the associated resistant exercises more than to say that I cannot well see how the present method of generating carbonic-acid gas by the acid sulphate of soda and bicarbonate of soda, or allied methods, admits of much improvement. The use of liquid carbonic acid is attended with such difficulties that I and some of my colleagues, who make use of carbonic-acid gas in various ways, have abandoned it. If, as I believe, it takes forty-five minutes to carbonate a tubful of water at 40° F., it would naturally take longer to carbonate it at 97° F. or 98° F., the heat required for the initial bath, and even if so charged the water would not retain its original gas-percentage. On the other hand, by the use of the carbonating powders and discs there is a constant evolution of nascent gas which has more nearly the properties of the Nauheim Spring waters and is more efficient than stored gas, for it is in a state of more minute division and besides the percentage remains about the same during the evolution. Actual experience confirms this statement. Moreover, there is always the danger of explosion when liquid gas is used, for this is always possible so long as there is a pressure of 1,000 lbs. to the square inch in the drum or apparatus and the attendant is inexperienced or careless.

Although the uses of the carbonated bath and resistant exercises are finding a constantly increasing field of usefulness, it is in cardiac insufficiency that they have a special field. In fact, they are applicable to all classes of heart weakness, whether resulting from acute infections, such as diphtheria, typhoid and the acute exanthemata, mineral poisons, dyscrasiæ, like lithemia and diabetes, or organic diseases of the heart and vessels. They are also useful in cardiac neuroses, such as are produced by emotional causes, hysteria, the tobacco vice, tea or coffee poisoning and masturbation, in functional diseases of the heart, such as are seen in anemia and in overuse of drugs, such as digitalis, strophanthus and others of this group, thyroid extract, or violent reduction methods, such as are practised at Carlsbad, Kissingen and other German spas. Usually angina pectoris, diabetes, parenchymatous nephritis, arteriosclerosis and phthisis are regarded as contra-indicating carbonated baths and exercises and my experience during the last year in general sustains this view, although it also indicates that in some instances they may be resorted to with benefit. However, we are making history as to the utility of baths and exercises in angina, arteriosclerosis, glycosuria and albuminuria, as the following cases show.

Case I.—Angina pectoris; direct aortic murmur; cyanosis; flatulent dyspepsia; general superficial edema. A young married woman of fine physique, weighing 140 pounds, was referred to me by Dr. F. A. Burrall of this city in May last. She had been ill for five or six years, and for the last eight months had been under active treatment for her heart affection, although gradually growing worse. Previous to her illness she had been given to athletic sports, such as riding, swimming, etc. The attacks of angina were regarded by her physician as of the true variety. The precordial pain was described as of "a house resting on the chest." Flatulent dyspepsia, dyspnea and transient cyanosis were other symptoms given. Attacks were brought on by nervous strain of any kind, particularly by prolonged conversation. They were temporarily relieved by nitroglycerin.

On physical examination the pulse was found to be 80, soft and weak, but without intermission. No impulse at the apex, but burning pain. No thrill; precordium and sternum sensitive to the touch and swollen; cording of lymphatics under left breast; apex over sixth rib and ⅛ inch inside of mammilla and 2⅜ inches below intermammillary line; at apex slight systolic murmur. At base systolic murmur carried well up into the great vessels.

Potassium citrate, nitroglycerin, strophanthus and strychnine had been given. All medicine was stopped and camphor monobromate in 2-grain doses ordered, with carbonated baths, and resistant exercises and massage. After four days of this treatment the swelling of the breasts had disappeared and after a course of only fifteen days she was sufficiently improved to return home, and in the following September, she was enjoying life, camping in the Maine woods, and feeling, as she expressed it, "restored to health." On the other hand, a patient with arteriosclerosis, angina, and complications, did not do so well.

Case II.—Angina pectoris; arteriosclerosis; glycosuria; albuminuria; apoplexy. Mr. H., a retired merchant, seventy-four years old, of full habit and rather obese, was sent me in September, 1889, by Dr. H. V. Barclay. He had been complaining of dysphagia and obscure gastric attacks coming on at night. On physical examination his pulse was found to be 80 and feeble, with hard radials, rolling under the fingers. Respiration 24. Impulse at apex hard to detect. Apex ½ inch outside of the nipple, and ½ in. below the intermammillary line. Heart sounds indistinct. Urine 1¼ per cent. sugar. Traces of albumin; specific gravity 1015.

Owing to his feeble condition the baths and exercises were stopped on the thirteenth day of treatment. On this day he had a gastric crisis at night and his head was confused in the morning. The condition of the urine remained the same. On October 23d a musical

murmur was heard with systole at the apex. He was now put on potassium iodide. Two or three attacks of angina had been brought on by the smell of cooking, and others by gastric or intestinal distention. On October 27th an attack was induced in my office by a smell of fresh paint. Relief was always obtained by capsules of nitrite of amyl with nitroglycerin, etc., the formula of which is given later. Patient nervous and hysterical. From October 30th for three weeks he was free from attacks, using the capsules only to ward off attacks, but his diet was strict. Under the iodide of sodium increased to nine minims of the saturated solution three times a day, the patient continued to improve, although he had occasional attacks of dizziness and was troubled by a sound like that of running water in his right ear, indicating the gravity of the disease in his cerebral arteries. In December he passed from under my care and on February 15th died of an apoplectic attack. It is scarcely astonishing that baths and exercises should have done so little in this case, where there was such a complication of disorders. It is important, however, to know they did no harm, notwithstanding the elements of albuminuria and glycosuria. In fact, I have not found that mild albuminuria and glycosuria necessarily contraindicate the use of baths and exercises as the following case will show.

Case III.—Arteriosclerosis, aortic direct and regurgitant murmur; cardiac hypertrophy albuminuria; glycosuria. L., sixty-four years of age, a retired man of business, was sent me by Dr. D. Bryson Delavan of this city, on account of persistent epistaxis due to endarteritis. Patient stated that he was rather short-winded, had occasional fainting attacks and shooting pains over the heart. No headache but pain in back of neck. Pulse 80, intermittent. Respiration 16. No dyspepsia. Facies arteriosclerotica. Physical examination, superficial enlargement of veins of chest especially of precordial area. Loud systolic murmur with first sound propagated up the great vessels and with second sound radiating to the right and also down the sternum. No mitral murmur. Heaving impulse. The apex was found just within the nipple and 2 inches below the intermammillary line. The loud murmur with the first sound at base corresponded with an area 5 inches in diameter, extending 3½ inches to the right of the median line and 2 inches to the left of it. By fluoroscopy this area threw a somewhat dark shadow, and to my mind indicated a fusiform dilatation of the aorta (ascending portion of the arch), although the shadow was not as dark as I have seen it in sacculated aneurism. Examination of the blood showed hemoglobin, 95 per cent. Examination of the urine was as follows: Daily amount, 24 ounces; specific gravity, 1025; traces of albumin; sugar, 2 per cent.; hyaline casts; urea, 6 grains per ounce. The patient took a course of resistant baths and exercises at Nauheim. On his return he was no longer short-winded, but had shooting pains occasionally over the heart. Pulse 72, one intermission instead of 4 per minute. Respiration 16. Superficial veins of chest not so prominent. Murmur the same, but cardiac enlargement diminished. As the patient contracted a rheumatic attack on his return voyage, he was put on the hot-air treatment and the iodides were given.

January 2, 1901, examination of the urine was as follows: Specific gravity, 1015; amount, 33 ounces; no albumin; no sugar; traces of indican. On March 23, 1901, the patient expressed himself as free from all disagreeable symptoms, although the auscultatory signs were little changed. The patient is now attending regularly to business.

There is also a condition that has been called idiopathic dilatation of the heart, such as is seen in young boys and especially girls, often of the working class, and those that are anemic and neurotic. It is seen also in phthisis or in any debilitating disease. The signs are an enlarged cardiac area, feebleness or absence or diffuseness of impulse, faintness of first sound at apex with accentuation of the second pulmonary sound, and marked accentuation of the aortic second sound (the hyperdiastole of Rosenbach). It is apt to be associated with menstrual disturbances, constipation and flatulence and is improved by rest, massage, tonics and laxatives and a restricted diet. If any cardiac stimulant is required, in the absence of the baths and exercises, iron and strychnine, but not digitalis or drugs of this group, are indicated.

In cases of kidney trouble it is not always well to be too certain about the result. As I have shown, mild cases of diabetes and albuminuria may be greatly benefited. In fact I have seen no harm but only benefit in glycosuria up to 2½ per cent. sugar. In severe cases, however, the diabetes should be treated successfully before baths are given.

Although slight albuminuria is no bar to baths and exercises, in parenchymatous nephritis the matter is different, as shown by the following case.

Case IV.—Cardiac hypertrophy; mitral disease; abdominal dropsy; chronic nephritis. Mrs. ——, twenty-nine years of age, from Memphis, Tenn., was referred to me by Dr. E. Miles Willett of Louisville, Kentucky, in October, 1889, the patient being extremely anxious to try a course of baths and exercises. She was unable to walk when brought to New York, and for several days after her arrival was confined to her bed. At fourteen years of age she had inflammatory rheumatism and at seventeen typhoid fever. In 1897 she had a hard labor, was cyanotic so that no anesthetic was given, and her child was delivered with forceps.

On examination a harsh systolic murmur was heard at the apex and carried round to the back. Apex below the left border of the nipple. Pulse, 64. Temperature, 98° F. Respiration, 24. Urine, specific gravity, 1012; scanty, faint trace of albumin. She was taking codeine in ½-grain doses, which had been given her in alternation with digitalis.

These drugs were stopped and she was put on strychnine and caffeine in small doses, with calomel as a laxative. Inasmuch, however, as the amount of albumin was small and the casts were infrequent, the patient was put on carbonated baths and exercises, although they were given irregularly, as attacks of heart failure and partial suppression made it necessary to proceed cautiously with them. However, after thirteen baths had been given, it became apparent that the patient had a confirmed chronic parenchymatous nephritis, and that, therefore, the baths would be of no use and might do harm. In fact, on one occasion the albumin during an attack of temporary suppression reached 66 per cent. by volume. In other respects, however, there was improvement. The patient was at one time able to sit up for a considerable part of the day and had even walked out on the street; the volume of the heart also had diminished, the apex receding ¾ inch toward the median line. On November 10th, however, she was taken down with an acute attack of lobar pneumonia which lasted nine days and during that time it was necessary to administer digitalis to promote the flow of water and relieve the abdominal dropsy that supervened. On four distinct occasions, also, she had attacks of heart failure, the radial pulse on one of them suddenly falling to 38 and three times to 44, during which nitroglycerin, the nitrite of amyl and alcoholics were satisfactorily used to restore the circulation. On November 24th she returned home in an improved condition, though ultimate recovery manifestly was impossible. In fact any improvement in such a case of heart disease complicated with chronic parenchymatous nephritis can of course be only temporary. Death occurred some months later.

Cases of advanced phthisis should never try the baths. I saw such a case with Dr. J. H. Huddleston of this city in February, 1900.

Case V.—Phthisis; mitral stenosis. The patient, a man who had been in very active business had long suffered from heart trouble, but had not been seriously ill until six months previous. He had been seen by a prominent consultant who diagnosticated the case as a chronic pneumonia of heart disease. I found him emaciated and bathed in a cold, clammy sweat. Radial pulse, 37 to 44, very intermittent and irregular in force. There had been hemoptysis, but no evening rise of temperature had been noted. Urine, 20 to 30 ounces; albuminuria. Feet and abdomen had been dropsical sometime previously. No bacilli.

Physical examination showed the apex in the sixth space. Action of heart tumultuous. Blowing murmur over the mitral area, not transmitted. Dulness at left apex. Cavernous respiration. I made the diagnosis of phthisis, notwithstanding the negative report as to bacilli in the sputum, and refused to recommend baths or exercises. In the following summer contrary to my repeated advice and that of his medical attendant, although his condition was much improved, he went to Nauheim where my diagnosis was confirmed, and after treatment by baths and exercises he was ordered to Egypt for the winter. He did not reach Egypt, however, but died at Rome within a year.

Cases of phthisis with albuminuria and hemorrhages should not take baths and exercises, at least until the pulmonary and renal symptoms have been successfully treated, or at least held in check.

In the subacute dilatation of young people, especially in anemic or neurotic girls and boys who lead a sedentary life, a little more exercise of a quiet nature in the open air, with nutrients, like malt, iron, arsenic and strychnine, and carbonted baths and exercises tend to restore the heart's tone and diminished dilatation.

In older people strychnine in doses from $^1/_{60}$ to $^1/_{30}$ grain every four hours is a good all-round nerve tonic. It stimulates the nerve centers in the medulla and spine and overcomes functional debility, whether of nervous of muscular origin. But it is seldom necessary to give more than $^1/_{40}$ grain at a dose. In fact strychnine, I hold, should not be kept up more than a week or ten days at a time, because it is cumulative and apt to disarrange digestion. Besides it conteracts both heart and arterioles, so that it is evidently undesirable and even dangerous for continuous use or in large doses. Somewhat similar in action is arsenic, a general tonic suited especially for the debility of anemic persons or of old age. A good plan is to combine arsenic, $^1/_{10}$ grain, with iron. Under the same category comes the cactus or *cereus grandiflorus* (night-blooming cereus of Mexico). It seems to stimulate the vasomotor centers and so regulates the heart. I have found it useful in myocardial diseases. It appears to have no cumulative effects. The dose is one to two minims of the fluid extract. It is better borne than digitalis or strophanthus. It acts probably as a general nerve tonic and appears to be a good succedaneum for strychnine.

Laxatives are essential in the treatment of chronic heart diseases. They should be carried to the point of producing at least one liquid or semi-solid movement a day. For this purpose I have been in the habit of using waters that contain sulphate of soda, such as the Apenta. In place of them I now use a preparation made for me by H. A. Cassebeer to get

the effect of the diuretic, hepatic and saline aperient. It consists of equal parts of the sulphate of soda, phosphate of soda and the neutral tartrate of potassium. The dose is one to two drams dissolved in hot water and it is taken warm one hour before breakfast. It may be replaced by a hepatic such as I prescribe frequently. It is composed of resin, podophyllin, gr. ½; ext. colocynth co., gr. i; ext. hyoscyami, gr. i, and ext. nucis vom., gr. ⅙. One pill may be taken as often as every other night. It can be taken almost indefinitely.

Among the cardiac sedatives I use valerian and also the bromide of zinc, the latter in $^1/_{10}$-grain doses. In bad cases I prefer the tincture of aconite in 2-minim doses every three or four hours. Aconite acts in general as a mild depressant of the heart and pulse. It is a vasomotor dilator, a diuretic to some extent and a mild diaphoretic. It is also very useful in the tumultuous heart, and being a vasodilator it is useful after overdosing with digitalis and drugs that contract the heart muscle. An excellent agent to quiet the mildly neurotic heart is camphor monobromate in 2-minim doses. It is especially useful in the fluttering heart of emotional women. Another drug which has a more limited use is belladonna, is beneficial where there are palpitation, anginoid attacks and arhythmia, but I prefer it as an external application.

For severe attacks of dyspnea, I give nitroglycerin in doses of from $^1/_{150}$ to $^1/_{80}$ of a grain, and I have given the latter dose as often as every hour for many hours together, for nitroglycerin, while it contracts the heart, dilates the arterioles. In fact, I always now use the nitrites for cyanosis or dyspnea in place of digitalis. I have not used erythrol-tetra-nitrate on account of its explosive qualities.

For sudden and violent attacks of dyspnea or angina, whether mild or severe, I give capsules containing each $^1/_{100}$ of a grain of nitroglycerin, ¼ of a grain of amyl nitrite and $^1/_{80}$ of a grain of menthol, with $^1/_{100}$ of a grain of oleoresin of capsicum. These ingredients are suspended in ten minims of castor oil. Relief is usually obtained in less than a minute, often in a few seconds. The capsule may then be given safely at intervals of four hours for days together to prevent subsequent attacks.

In precordial pains and insomonia, especially in the morphine habit, I have used paraldehyde with success. It is a hypnotic, antispasmodic and stimulant. I give it in 30-grain doses, with success, and without any subsequent bad effects. I have also used trional successfully in some instances when there is the opium habit, but I give them only for very brief periods. I never use any preparation of opium except when the patient has the opium habit, which is not uncommon in old cases. One of the most unfortunate results of drugging by digitalis and its allies is that it produces such distressing effects that patients seek relief by opiates. A course of baths and exercises is in these cases a revelation to the patient, who suddenly finds that he can do without either drug.

Digitalis, as is well known, derives its strength and utility from certain glucosides, such as digitalin and its congeners and digitoxin, which regulate the action of the heart and have their most satisfactory field in insufficiency of the left heart. They are inapplicable in an attack of engorgement of the right ventricle, because they do not act quickly enough, so that if there is a heaving impulse, distended jugulars and cyanosis, the indication is rather letting of blood by wet cups.

As a rule, however, I use digitalis only when special complications arise, namely, when we are confronted with urinary suppression or its attendants or sequellæ. It is then desirable chiefly for its diuretic effects. The more I see of heart diseases the more I am convinced that digitalis is uncertain and, therefore, a dangerous remedy in so far as its action on the heart is concerned. It produces spasms of both heart and vessels. In some instances, as in the fatty heart, I believe it may easily cause death in this way. It is truly a two-edged sword, and even in our efforts to get its diuretic effects in suppression, we may cause fatal contraction of the heart. But digitalis is too slow in its action to be relied upon in emergency where diuresis is needed.

In these instances it may be better to use every other means of restoring the action of the kidneys rather than to run the risk of bringing in a fatal cardiac contraction, or, if digitalis is given to secure diuresis, it may be given in small doses every four hours combined with a bitartrate (20 grains). There has been some discussion recently as to the value of digitoxin. It has been claimed to be one of the most active glucosides contained in the *digitalis purpurea*, and has been vaunted as less liable to affect the stomach than digitalin. Its action, however, may be deferred for twenty-four hours, less often for twelve. It is said to be a good diuretic and this characteristic lasts eight or ten days. It will be remembered, however, that Arnold and H. C. Wood (*Amer. Jour. Med. Sciences*, August, 1900) reached the following conclusions from the experiments as to the use of digitalin and digitoxin: Digitalin is a stable compound, etc., while digitoxin is not to be recommended for human medication on account of its irritant action on the stomach when given by the mouth, and because it causes abscesses when given hypodermically, or because it is insoluble and hence is slowly absorbed, making its action irregular. It has also a marked cumulative action. In using digitalis I have latterly confined myself to Merck's digitalin.

Strophanthus is the succedaneum for digi-

talis, but the two have somewhat similar physiological effects. According to Fraser, as a heart compressor it acts much more powerfully than digitalin, and as an arterial depressor much less so. It slows the heart beats, shortening the systole but lengthen the diastole, though unlike digitalis it is not much of a diuretic and does not directly contract the arteries and is not cumulative; in these two last respects it differs widely from digitalis. Unfortunately, in large doses it is apt to produce diarrhea, dyspnea, nervous irritability and cyanosis. It sometimes does well, however, in emergencies, acting more promptly than digitalis, but it is irregular in its actions and its effects are short-lived. It should not be long continued.

Convallaria majalis, the lily of the valley, has much the same physiological action as digitalis. It slows the heart without weakening its tone, and is a diuretic without cumulative action. But in small doses it is an emetic, and it purges actively like jalap or scammony. It is good in dropsies, but inapplicable in mild forms of cardiac disease. It is useful when cardiac stimulation is to be combined with mild diuresis and catharsis. I cannot say that I have ever been much pleased with it.

In adonis, from the *adonis vernalis* and *adonis æstivalis*, we have a drug that owes its properties to a glucoside adonidin whose physiological characteristics are allied to those of digitalis. It slows the heart, regulates it and increases its force and is also a diuretic. It is useless in functional disorders. I have used it, but not in sufficient quantities to be able to speak intelligently of its action.

Sparteine increases the blood-pressure and slows the heart, but it is unreliable, although it may act in twenty minutes or again not for four or five hours. It acts chiefly on the heart muscle, which causes the increased pressure, but it may act also on the vasomotor system. I have had some good though temporary results from it as a diuretic and heart stimulant in doses of $^1/_{20}$ to $^1/_{10}$ grain.

Diuretin, the sodium salicylate of theobromine, is something of a diuretic, though thus far I have not been pleased with its action in cardiac dropsy.

It is well to remember that caffeine is not always made from coffee, but from tea, Paraguay tea, guarana, or the kola-nut; that in large doses or in certain individuals it may produce cardiac spasm and even paralysis, and that its secondary effect on the heart is depressing. Further its action in contracting the vessels tends to congestion, especially of the portal system. The stimulation of the brain and nerves, moreover, produced by caffeine is followed by relaxation. In association with its stimulating action on the heart and vessels, there is a diuretic action when the drug has been administered continuously. Coffee in a certain percentage of cases is a poison. It is not, therefore, always a safe remedy. Usually it is a feeble diuretic, though at times it is effective when other diuretics have failed. I am using it less and less. An error is often made in prescribing citrate of caffeine on the supposition that it has the strength of caffeine. As a matter of fact it contains only 50 per cent. of caffeine.

I must not fail in closing to mention that in place of the hot-air box, used so extensively for diaphoresis in the fatty heart of obesity, rapid reduction in weight may be effected by the use of what is known in England as the "radiant heat" method. The patient lies or sits in a box where the heat is supplied from specially devised electric lamps of large size. This plan is in use in Bath and Leamington (England) and in Carlsbad. It is claimed that heat generated by electricity (radiant) is for some reason more effective in rapid reduction than any other form of heat and peculiarly suited to obstinate cases. My friend Dr. Olive of Leamington, in one case of excessive obesity found it very effective.

In cardiac dropsy, to secure free diaphoresis, I use the muriate of pilocarpine, giving a grain or so a day in divided doses with cardiac and alcoholic stimulants. In fact I have given 1⅓ grains a day, because it requires this amount to secure diaphoresis. Though its action has to be carefully watched by the nurse or physician, I have not had any unfavorable experience with it.

In conclusion, the purpose of this paper will not have been accomplished unless I have made it appear that the idea of complete rest has been surplanted by rest alternating with bodily activity; venesection by determination of the blood to the surface through resistant exercises and carbonated baths; hydrogogue cathartics have been replaced by stomachics and mild laxatives and diuretics; heart stimulants by general nerve stimulants or sedatives, and nutrients, while drugs of the digitalis group are utilized chiefly for their diuretic action in renal complications, mainly parenchymatous nephritis or abdominal dropsy. Drugs of the digitalis group, including strophanthus, convallaria and adonis are always uncertain and, therefore, always dangerous, and should only be employed either when other remedies are inadvisable or in kidney or liver complications, or where we are merely endeavoring to prolong life.

GOUTY AFFECTIONS OF THE KIDNEYS.[1]

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Etiology.—The association of gout and diseases of the kidneys is so frequent that some of the most experienced observers maintain that these organs are rarely found in a healthy or adequate condi-

[1] Read in the symposium on Diseases of the Kidneys at the recent annual meeting of the Colorado State Medical Society.

tion after gout has become fully established. Statistics compiled by Luff of the autopsies of 77 cases of granular kidney disease show uratic deposit in 41, whereas in those described as markedly, or typical granular kidneys, the proportion is 26 to 20. Furthermore, the close relationship between gout and renal disease is amply demonstrated by the well-recognized fact that certain toxic agents, such as lead and alcohol, are productive of both disorders. But, notwithstanding our recognition of the frequent co-existence of the two diseases, and the unrelenting labor of many eminent investigators, the much mooted question as to whether gout is the primary causative factor of kidney trouble, or *vice versa*, is still a matter of controversy.

The rôle of uric acid in the etiology of renal disease, as also in other conditions, is a most perplexing problem. By some observers it is assumed that uric acid and its compounds, acting as a chemical irritant circulating in the blood, set up a destructive process, starting in the epithelium of the convoluted tubes. On the other hand, it has been shown that uric acid is present in the blood only as the soluble sodium quadriurate, an inert non-toxic compound, and it is only under abnormal conditions that it deposits in various parts of the body in the form of the neutral biurate and becomes an irritant. Finally, uric acid may be present in the blood in large quantities, as, for instance, in leucocythemia, but is rapidly excreted without causing any damage as long as the kidneys are in normal condition. It is claimed that only when the functions of these organs are primarily impaired is there deficient elimination of uric acid with all its evil consequences.

Symptomatology.—The clinical symptoms comprise secondary disorders, resulting from renal insufficiency, and differ in no way from those of other forms of chronic interstitial nephritis except for the co-existence of gouty manifestations. As these last named begin to become more chronic, it is not uncommon to find the urine increased in quantity, of low specific gravity, 1006 to 1015, with a deficient amount of urea and uric acid and a small quantity of albumin; microscopically, there are usually few epithelial or granular casts present. Concurrent with these urinary changes are cardiovascular alterations, evinced by hypertrophy of the left ventricle and sclerosis of the arterial system, the arteries becoming hardened and tortuous, and the pulse of high tension.

The course is usually that of the extremely chronic type of Bright's disease, extending often over many years. At first the gouty symptoms preponderate in the clinical picture; later these subside to a great extent and, as the renal trouble progresses, the patient feels relieved of his gout, but finally succumbs to exhaustion, general dropsy, or uremia.

In a goodly number of urinary analyses of gouty patients made by me during the past three years, the above enumerated findings have sometimes been obtained, but by no means in the majority of cases, even in which gout has become eminently chronic, does the urine reveal the co-existence of kidney disease. But common to all cases of gout, as well as lithemia, its next-door neighbor, my quantitative urinanalyses show without exception, a marked diminution in the daily amount of urea excreted quite independent of the slightest evidence, either chemical or microscopical, of a co-existing renal lesion. I report this observation here, being unable to find in the literature, notwithstanding an extended search, any record of this deficient urea excretion, except in conjunction with Bright's disease and general marasmic condition, and I hope to be able to collect sufficient material to present more conclusive results in a future communication.

Pathology.—The so-called gouty kidney is identical in appearance with the small, red, granular kidney of other origin. It is much contracted, with a shriveled granular surface, and the capsules thickened and adherent. The decrease of size is chiefly at the expense of the cortical portion. Microscopically, there are present the signs of destruction of the renal parenchyma with connective tissue formation, degeneration of the epithelium of the uriniferous tubules and the glomeruli, and endarteritis obliterans of the larger arteries. Deposits of uric acid and urates, appearing as white streaks in the direction of the tubes in the pyramidal portion and little white points in the cortical, were attributed to the gouty origin of the trouble, but since these same concretions have been demonstrated in the kidneys of very young children, and in other conditions, they cannot be considered pathognomonic. Besides the small contracted kidney, large, and mixed granular forms have also occasionally been met with, and described as dependent on gout.

Treatment.—There being no specific for Bright's disease, we are compelled to have recourse to symptomatic treatment, dietetics, régime and climate. These vary but little in the different forms of chronic nephritis, and have been thoroughly discussed in other papers. Moreover, broadly speaking, when kidney disease and gout co-exist a course of treatment, proving beneficial to the one, agrees admirably well with the other.

My experience in the treatment of these troubles with mineral water baths has been so encouraging as to induce me to allude to the balneological aspect in this place. We have in Glenwood Springs an unique establishment, known as the Natural Vapor Caves. Thermal springs, boiling up in these, charge the space with vapor and gases and raise the temperature to 110° to 112° F. A few minutes' stay in this atmosphere suffices to set up an intense cutaneous reaction, perspiration continuing, if not checked, for several hours after leaving. The other varieties of baths, though acting in general in a lesser degree of intensity, still exert a sudorific action far in excess of plain water. The cave baths, especially, have proved to be powerful eliminating and absorbent agents in ridding the body of large quantities of water and metabolic waste products, and, in renal disease, relieving the inadequate kidneys

and reducing edema. Indeed, the support given the kidneys is in some cases remarkable and substantiated by observations of, for instance, inebriates with alcoholic nephritis in whom the outbreak of delirium has been apparently averted by the timely application of the baths in conjunction with rational medical treatment. Thus, my experience leads me to believe that our mineral baths, under proper medical direction, are a valuable adjunct in the treatment of renal disease, and in gout their action is nothing short of specific, the benefit derived therefrom being not only temporary, but often lasting. During the "cure" the internal administration of Yampah water is useful; acting as a mild laxative, it also stimulates the functions of the liver and gastro-intestinal tract and improves the condition of the latter.

UREMIA AND ITS DIFFERENTIAL DIAGNOSIS.[1]

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IN THIS paper the classification of the symptoms will not be considered, as the nervous, gastro-intestinal and the dyspneic manifestations of the disease are all brought about by the action of the poison in the blood on the central nervous system. As a matter of convenience we will study the various symptoms which occur in the acute and chronic cases of this disease and later take up the differential diagnosis in full.

One of the first manifestations of uremia is the headache, which may be associated with other nervous phenomena, such as numbness and tingling sensations, itching of the skin, dizziness, and gastro-intestinal disturbances. These symptoms are always found in the chronic cases and one or all may precede the drowsiness or usher in an acute attack. The headache is usually dull in character, occipital, extending down the neck.

At the Arapahoe County Hospital I have seen a number of cases in which the headache was unilateral and the paralytic symptoms which followed corresponded to the side on which the headache occurred; at the autopsy edema of the brain was found on the cerebral hemisphere opposite to that of the motor paralysis.

These symptoms may appear suddenly or gradually without any suspicion of disease of the kidneys. Drowsiness is an early symptom and may be slight or severe in degree, and if it is intense it soon passes into coma. The coma from uremia is not as pronounced as that found in cerebral disease. Preceding or during the coma convulsions varying in degree and not localized to any portion of the body may take place, although in the majority of cases one side is more affected than the other. Gowers states: "Rigidity of limbs or local muscular twitching during the coma is, if constant in seat, in favor of cerebral mischief; if variable in position, it is in favor of uremia."

Acute mania, delusional insanity and melancholia may develop, although the latter is not frequently seen. Dyspnea of a hissing character resembling the paroyxsmal attacks seen in leucemia is a typical symptom of the chronic form

Bradford says, "More frequently, however, the dyspnea is only the accompaniment of other uremia manifestations, and its peculiar hissing quality in a drowsy patient, with bleeding gums, is very characteristic of the uremic state."

In the acute cases the dyspnea is paroxysmal, while in the chronic it is hissing and soon becomes Cheyne-Stokes in character. Monoplegia or hemiplegia may develop after a convulsion or come on gradually without any apparent cause. Frequently in chronic Bright's disease insomnia is a very troublesome symptom and is associated with cramps, twitching, and hiccough without any disturbance of consciousness. The pulse is full, strong and slow early, but as the uremic state becomes deeper it is increased in frequency. The pupils are usually equal although in the majority of the cases seen by the writer the pupils have been contracted, and in one case of interstitial nephritis all the symptoms corresponded to those of opium-poisoning, *i. e.*, contracted pupils, slow respiration, slow pulse, loss of reflexes, deep coma, although a slight trace of albumin and a few casts were found in the urine. One must always bear in mind the peculiar physiognomy in these cases and at times may detect the odor of urine in the breath. The temperature is either normal or subnormal, and when a rise of temperature is present it can be accounted for by some inflammatory process in the body. Suppression of urine may be one of the first symptoms and is a constant one. When vomiting accompanies the scanty urine the vomited material sometimes has the urinous odor. In some cases typical albuminuric retinitis is present and the patient may complain of impairment of vision or may be totally blind.

There is a form of uremia called from its very light symptoms "latent uremia" and due to complete obstructive suppression of urine. The symptoms are as follows: Little headache, nausea, pupils contracted, tongue dry, temperature subnormal, weakness and drowsiness and toward the end slight twitching of the muscles. The most trustworthy signs are the contracted pupils, subnormal temperature and no loss of consciousness.

In making a differential diagnosis the various diseases of the nervous system are first to be thought of. Cerebral hemorrhage may be simulated by the uremic state, but the constant hemiplegia associated with conjugate deviation of the eyes, together with deep coma and inequality of the pupils, would suggest hemorrhage.

Unilateral convulsions are always in favor of cerebral mischief. Local muscular twitching or rigidity, if constant in seat, is an indication of disease of the brain; whereas if it is variable, it is probably due to uremia.

[1] Read in the symposium on Diseases of Kidney before the Colorado State Medical Society.

The temperature in uremia is usually normal or subnormal, while in cerebral hemorrhage it is subnormal at first; later on fever is developed which is higher on the affected side. In uremia the temperature of the body is the same on both sides and is usually due to some complication, such as pneumonia or other inflammatory condition.

The face has a characteristic waxy hue in renal disease, whereas, in hemorrhage it is flushed with the throbbing carotids. If albuminuric retinitis is present, associated with albumin and casts in the urine, without any localizing symptoms, cerebral hemorrhage can be excluded. The same points hold good in cerebral thrombosis and embolism, excepting that in the former we have the prodromal and the local symptoms developed without any disturbance of consciousness or only slight in degree and of short duration.

Latent uremia simulates this vascular lesion more than any other form of the disease. We are not justified in making a diagnosis of cerebral embolism unless a definite cause is discovered, such as endocarditis, a suppurative process in some portion of the body, the parturient state, or blood changes often found in chronic syphilis, with exhaustion. Simple apoplexy of the aged has the same symptoms as the vascular lesions without any pathological change to be found. In tumor of the brain the history of the case, with distinct localizing symptoms associated with marked choking of the optic disks, would be sufficient to exclude uremia, for in kidney disease the degenerative changes which take place in the retina are characteristic. Suppuration in some portion of the body, particularly middle-ear disease, irregular temperature, slight swelling of optic disks, permanent unilateral symptoms are the principal ones of abscess of the brain. Meningitis may be a complication of uremia, or the symptoms in kidney disease may closely resemble the former, but the irregular, slow pulse, rigidity of posterior neck muscles, increased temperature, involvement of cranial nerves, and irregular respiration are typical of meningitis. The pulse in meningitis is the same as that found in uremia, being slow at first and later becoming rapid.

In simple syncope we have no convulsion, rigidity of the muscles, paralysis or any degenerative changes in the retina.

In chloral-poisoning the patient is in a deep sleep without any twitching of the muscles, whereas in uremia as the case progresses the twitching is especially seen in the forearms. The history of the case and absence of any evidence of renal disease would exclude chloral-poisoning. The smell of alcohol is frequently detected in the breath in unconscious cases, but should only be given weight when there is an absence of symptoms of constitutional disease and affections of the nervous system.

The coma in alcoholism is always noisy in character and is never preceded by convulsions. The appearance of the pupils is of little value, for they may be normal, contracted or dilated. In alcoholism paralysis never occurs unless there is a complication, such as peripheral neuritis or a cerebral vascular lesion.

The typical symptoms of the second stage of opium-poisoning are contracted pupils, slow respiration, four, eight or ten per minute, slow pulse, dilated capillaries of the face, and in the absence of albumin or casts in the urine would guide one in arriving at a definite conclusion.

Lead-poisoning may be mistaken for uremia as the attack may be ushered in in the same manner, but the presence of lead in the urine and the blue line of the gums would remove all doubt.

In diabetes mellitus the nervous symptoms and coma may be profound, but the large quantity of sugar in the urine would be sufficient to make a diagnosis. The uremic convulsions may be epileptic in character, but the history of previous attacks, with the tonic and clonic stage, flushed face, biting the tongue during convulsion, the short duration of the attack, and absence of any symptoms of renal disease would prevent a mistake. It is a difficult task to make a differential diagnosis between epileptic coma and uremia when a previous history of the case cannot be obtained. In the latter, however, the increased arterial tension, albumin and casts in the urine, degenerative changes in the retina and hissing respiration would serve to distinguish it from the former.

A malingerer may feign the symptoms of uremia; the two most frequently feigned by these persons are convulsions and coma. Convulsions which are variable in degree and not localized in any particular portion of the body are characteristic of renal disease, while the feigned spasm is general with an absence of any other signs of kidney disease. In the coma of malingering the pulse, respiration, and pupils will be normal, and all other signs of kidney disease will be absent. A person who is feigning coma can be detected by making severe pressure over the supra-orbital nerves or pricking the patient with a pin, causing a voluntary movement of the limb or an utterance of abusive language. This is not true of coma due to the kidney disease, if it is intense.

Hysterical coma is usually seen in females and is ushered in by delirium or may come on suddenly. The temperature may be raised, if severe muscular exertion has been made; otherwise it is normal, as is the pulse. There is retention of urine, but all other indications of renal disease are absent.

In cerebral anemia produced by sudden loss of blood, headache is rare; although in anemia caused by blood states, headache is general and neuralgic in character, associated with drowsiness, vertigo and mental dulness. These symptoms are present in uremia, but are not relieved when the recumbent posture is assumed, as they are in anemia of the brain. The history of the case, absence of degenerative ocular changes, and urinary symptoms will aid in making a differential diagnosis.

The symptoms of cerebral congestion are just

the opposite to those of uremia and are as follows: Face flushed, throbbing carotids, conjunctivæ injected, temperature elevated, full, strong, rapid pulse, no twitching of the muscle and a history of exposure.

Convulsions or coma which are seen in paretic dementia, chronic alcoholism and syphilis, can be detected by symptoms which point to organic disease of the brain.

THE CARDIO-VASCULAR CHANGES OF RENAL DISEASE.[1]

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MANY of the most striking features of nephritis, especially of the chronic forms, proceed from the changes brought about in the cardio-vascular system by the disease. These features are chiefly dependent upon the arteriosclerosis, the high arterial tension, and the hypertrophy of the left ventricle. The weakened vascular wall, unable to withstand the high tension, especially under some sudden overaction of the hypertrophied left ventricle, gives away and cerebral hemorrhage results; or from obliterative endarteritis the nutrition of the brain, the heart muscle, the walls of the large arteries where the vasa vasorum are affected, or other important structures, suffer and a fatal result often occurs. The troubles are practically confined to the systemic side of the circulation, and are most pronounced in chronic interstitial nephritis. Although the exact relations between the high tension, the arteriosclerosis and the cardiac hypertrophy are not yet settled, their association in well-marked cases is constant.

In gout and in nephritis the smaller arteries are usually involved in the sclerotic process, syphilis having a certain predilection for the basal vessels of the brain, and muscular overstrain affecting chiefly the aorta and large arteries. The reason for the especial involvement of the renal arteries is supposed to be that they are particularly exposed to the irritation of the waste products they are called upon to eliminate.

The nodular form of arteriosclerosis, according to Thoma, may lead to such localized weakening of the vessel-wall as to favor the production of aneurism; the senile form may be very general and accompanied by senile atrophy of liver and kidneys, yet the heart is often not enlarged; while the diffuse arteriosclerosis, found in muscular middle-aged men, particularly negroes, is accompanied by marked hypertrophy of the left ventricle. Increased consistence is always to be found in the kidneys. Although the sclerotic changes in the arteries may not be particularly notable to the naked eye, under the microscope the evidence of this change is always decisive.

[1] A contribution to a symposium upon Diseases of the Kidney, before the Colorado State Medical Society, June 19, 1901.

Mahomed believed that in the red, granular, contracted kidney the disease was generally primary in the vessels. The kidneys may be small, we are told by Osler, perhaps weighing no more than one ounce and a half, with great thickening of the small arteries. The view most favorably received at present is that the chief trouble "is in the secreting tissue of the tubules and the glomeruli, and that the connective tissue overgrowth is secondary to this." Mott states that the capillaries of the glomeruli show the hyaline change especially well, and that they are thereby frequently obliterated.

Fagge, quoting Cohnheim, believes that the small vessels of the kidney regulate the amount of blood in that organ, not in accordance with the amount needed for its nutrition, as in other tissues, but in accordance rather with the amount of waste matter contained to be eliminated. In case of destruction of portions of the kidney tissue the remainder must shoulder the whole burden, an increased pressure being obviously indispensable. To increase the pressure in this part of the vascular apparatus it is, of course, essential that it shall be maintained at a high point throughout the body.

Thoma, as quoted by Allbutt, found by injection experiments upon cadavers that fluid could be injected more readily and in much greater amount into the vessels of the subject free from atheroma than in one with marked arteriosclerosis. He concluded, further, that the capillary walls in the latter case were much less permeable to fluid. Mott suggests that the capillary area of the general circulation is greatly diminished on account of the fibrotic changes.

In the brain, in addition to the usual atheroma, an added source of danger exists in the well-known miliary aneurisms. It is thought that one reason for their great frequency here lies in the atrophy of the brain substance around the arteriole, and consequent loss of support to the vascular wall. Another reason is that the vessels are terminal in their nature, and derived directly from large trunks. F. W. Mott states that of 1,600 autopsies at Charing Cross Hospital there were 60 cases of cerebral hemorrhage. Thirty of these occurred in the subjects of interstitial nephritis with hypertrophy of the heart. Fagge lays stress upon the same point. Lancereaux in 61 cases of arteriosclerosis found interstitial nephritis in 55. We may readily conclude that the greatest predisposing cause to cerebral hemorrhage is interstitial nephritis with its accompanying arterial degeneration.

All these points considered, it is not strange that we have cerebral hemorrhage so frequently as the last event in chronic Bright's disease. We have the damaged cerebral arteries, with, frequently, the miliary aneurisms spoken of, and the high arterial tension because of the hypertrophied left ventricle. It is to be expected that, sooner or later, a little temporary increase in this pressure, owing to sudden exertion or otherwise, will cause the fatal rupture. Mott states that apo-

plexy is rare in the absence of cardiac hypertrophy, even though atheroma be well advanced.

The hypertrophy of the heart may not be confined to the left ventricle in extreme cases, but may involve all the cavities, and give an organ weighing three or more times as much as normal. This is probably in part due to the contraction of the muscular coat of the arterioles under the irritation of waste ingredients circulating in the blood and in part to the obliteration of much of the capillary outlet through the kidney, as mentioned by Traube. Many of the fibroid and fatty degenerations of the cardiac muscle are directly due to atheroma of the coronary arteries sequential to interstitial nephritis. Deterioration of the muscular power in these cases means dilatation, relative insufficiency of the mitral valve, and dropsy of the lungs and, finally, of the whole system, if life be prolonged. The edema is in part due to the cardiac failure, in part to the capillary changes and the hydremic condition of the blood. In these renal cases cardiac failure is of relatively greater importance than in others, since it is solely by virtue of the high tension that the kidneys continue to act. In the absence of a serious nephritis the outlook, while less gloomy, is nevertheless grave.

The direct source of the diminshed blood supply through the coronaries is generally a gradually-developing obliterative endarteritis, possibly more marked in certain areas than in others. With such a condition there is always the danger of thrombosis or embolism, with sudden cutting off of the remaining blood supply and almost immediate death.

It is in just such cases as these that angina pectoris is so common. The frequent association of atheroma, angina and aortic regurgitation is to be noted. This form of valvular disease, in these cases, commonly originates in an extension of the atheromatous process of the aorta to the segments of the valve, while the regurgitation at the mitral orifice, as already mentioned, is by a totally different mechanism. The aortic leakage may supervene years after the renal, arterial, and cardiac signs of interstitial nephritis are well marked. Thus I have examined this week a gentleman over seventy years of age, who, two years ago, had an increased amount of urine, with albumin and hyaline and granular casts, hypertrophy of the heart to such an extent that the apex beat was to the left of the nipple, and calcareous arteries. With the exception of marked accentuation of the aortic second sound his heart sounds were then normal. He has now developed a long, soft, blowing diastolic murmur, traceable from the second right interspace to the apex, undoubtedly due to regurgitation from a damaged aortic valve, and presumably by the extension of the atheromatous process mentioned.

Of gangrene of the extremities, especially the lower ones, from a similar process, we need not stop to speak. It does not differ essentially from that found in the absence of nephritis.

Owing to the narrow time-limit necessarily imposed in this symposium I shall touch but momentarily on treatment. Of prognosis it is necessary to say that it must eventually, perhaps only after years, in the cases with albuminuria, palpable arteries, hypertrophy of the heart, high tension and consequent aortic second accentuation, be that of the senility of which it is practically an anticipation. It is probable that iodide of potassium does more good than any other remedy in mitigating the symptoms and delaying the progress of arteriosclerosis. A diet such as one would recommend in gout, with free use of mildly alkaline mineral waters, is in order. The nitrites are most likely to relieve the high tension and associates dyspnea, anginal pain and headache. The eventual cardiac failure and the accidental complications of the disease must be treated as under other conditions.

RENAL FUNCTIONS AND LIFE INSURANCE.*

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LIFE insurance interests have developed in the past thirty years to such magnitude that a physician can no longer afford to look lightly upon examinations for insurance. "In the United States on January 1, 1899, the level premium companies reported business representing a total insurance in force of $6,825,037,770; and the assessment companies and fraternal orders, an amount stated as $7,779,428,000. In short, nearly 15,000,000 policies were then in force, and $14,624,465,770 is the stupendous total. Nearly every dollar of this great liability represents the opinion of members of the medical profession."[1]

It has been estimated that about one-sixth of the applications for life insurance at standard rates are refused, all causes being taken into consideration, and that at least one-fourth of these rejections are based upon the presence of albumin in the urine.[2] One-twenty-fourth of the total number of applicants! Plainly, they are not all sufferers from irreparable damage of the kidneys.

On the other hand, a proportion of death losses of 10 to 12 per cent. from kidney diseases, as estimated by some life insurance statisticians, shows that in many cases not enough care is exercised in urinary examinations. One conservative old-line company, in its report for 1900 shows 8 per cent. of its death losses from kidney diseases, as against about 10 per cent from tuberculosis. This, too, is not a company which does any sub-standard business.

In securing a sample of urine for examination it is well to be sure that it was passed by the applicant. Cases of substitution come to light not infrequently. Greene cites one which recently came to his notice in which an obliging friend loaned a sample of his normal urine

* Read before Colorado State Medical Society, June 19, 1901.

to an applicant whose own urine by later examination was found to be highly albuminous.

At present most companies require chemical examination of urine in all cases; in a list of twenty-four companies I find but one which requires more than a single chemical examination, except there be two examiners, and that only when the amount asked for is $30,000 or more. Microscopic examination is in most cases not expected, except when specially requested by the company, and this only in suspicious cases. Tests for reaction, specific gravity, sugar and albumin are the only ones commonly required. A persistent alkalinity would suggest the bladder. Some neurasthenics with copious urinary deposit of oxalate of lime crystals have a urine with persistent alkaline reaction.

A high specific gravity may mean but a temporarily concentrated urine, one which will deposit urates on cooling, it may be, and which heat will render clear. The heavy urine of a chronic parenchymatous nephritis would contain an amount of albumin easily determined, together with casts, epithelial, granular and hyaline. There would probably be found, too, at least a suggestion of edema at the ankles, even in slight cases. If high specific gravity be due to the presence of sugar it will be easily shown by either Haines' or Fehling's test. It will not be forgotten, however, that a urine with specific gravity as low as 1015 may contain sugar if, in addition to diabetes, there be interstitial kidney changes.

A urine of very low specific gravity, say 1003 to 1010 may signify the polyuria of diabetes insipidus, especially if it be a young male; if it be a young female it will more probably be that of hysteria. If the applicant is nearing middle life, a urine of the specific gravity mentioned, 1003 to 1010, demands serious consideration, which leads at once to the most important part of this entire discussion, *vis.*, the presence of albumin, either with or without casts; the significance of both and the prognosis of these cases from the life insurance standpoint.

The whole question of albuminuria still continues, as it has been, a moot one. That it is not regarded now, as formerly, as diagnostic of Bright's disease is, however, unquestioned.

"The number and variety of the pathological relations under which albumen may appear in the urine compel us to regard it as dependent not only upon inflammation, grave congestions and other coarse organic changes, but upon slight variations in the mechanical conditions of the circulation in the kidney. Excluding accidental admixtures of blood or pus from the bladder or urethra, albuminuria is met with not only in acute and chronic Bright's disease, but in diseases of the heart, lungs, and liver, in peritonitis, pregnancy, abdominal tumors, in most febrile and inflammatory diseases. In many cases of poisoning, in cancer, tubercle, and syphilis; in lardaceous disease, in anemia, debility, dyspepsia, purpura, scurvy, after paroxysmal hemoglobinuria, in gout, in delirium tremens, in various diseases of the brain and spinal cord, in epilepsy, in certain skin diseases, as well as in apparently healthy persons after bathing, exercise, etc."[3]

A so-called physiological albuminuria has been observed and studied by Leube, Grainger Stewart, Stirling, Senator, and others, as occurring in the apparently healthy in from 4.2 to 44 per cent. of those examined. In these exercise and posture seemed to modify the amount of albumin, it being increased by active exercise and also by the erect posture.

To this class belong also the two forms of latent albuminuria described by Moxon in 1876. The first he called the albuminuria of adolescence. It occurs in youth or young men and is nearly always present in some specimen of the urine collected for forty-eight hours. The other form he called remittent albuminuria, renamed cyclical albuminuria by Pavy. In this, urine passed after breakfast usually contains albumin; there is then a remission and the early morning urine contains none.

Saundby,[4] speaking of this class of cases, says: "I do not care to contend that there is not some departure in these cases from the normal mechanism of the renal circulation; but it is certain that neither this lesion nor the loss of albumen gives rise to any derangement of health which impairs the working capacity of the individual or tends to shorten his life; in other words, there are cases of albuminuria which not only do not require medical treatment, but may be safely accepted by life assurance companies."

Others look upon these albuminurias as being accompanied in all cases by a slight lesion of the epithelial lining of the uriniferous tubules and, therefore, pathological in character; easily recovered from, it is true, but resulting at length, if continually repeated, in permanent pathological change.

Clement Dukes,[5] who has devoted much attention to the albuminuria of adolescence, says: "The cases of early albuminuria, so common in the young, constitute the early stage of what may eventually become developed into that chronic disorganization of the kidneys termed Bright's disease."

So excellent a clinician as Osler, in his "Practice of Medicine," says: "The physician is daily consulted as to the relation of albuminuria and life assurance. As his function is to protect the interests of the company, he should reject all cases in which albumen occurs in the urine. It is even doubtful if an exception should be made in young persons with transient albuminuria."

In the matter of casts and their estimated importance there exists at the present time the same dissonance of opinion. Any one who has made any considerable use of the centrifuge

must have been impressed by the frequency with which a stray hyaline cast or two has been encountered in urine presenting no other evidence of kidney disease. Haines and Skinner[8] claim that by their careful methods of search casts may be found in the urine of persons in perfect health.

Kobler,[7] has studied this question carefully and concludes that the true significance of hyaline casts is not known; that even granular and epithelial casts are often found when no morbid condition of the kidney exists, but when there is gastro-intestinal disease, especially when this is accompanied by violent diarrhea, in some cases also when a condition of constipation is present.

Others, however, are inclined to regard the presence of even the hyaline casts, at least in anything more than the smallest numbers, as of serious import. In this connection I quote Purdy[8] as saying: "Numerous observers have found hyaline casts in non-albuminous urine, but the author agrees distinctly with Bartels in that he has never met with them save in albuminous urine or urine that has recently been albuminous."

By way, then, of summary, in view of the divergence of opinion on these points among competent men, I believe a medical examiner is justified in recommending for insurance an applicant *below middle life*, whose urine may have shown albumin or casts, or both, only after continued observation for a length of time, and even then only as a substandard risk. A safe exception to this rule might be made in cases in which, with other evidences of perfect health, the urine with use of the centrifuge showed but a few stray hyaline casts. *After middle life* the rule should be practically absolute *against* recommendation in the class of cases under consideration.

In many cases near or past middle life great reliance must be placed upon the condition of the heart and the blood-vessels. An apex-beat beyond the nipple line, an accentuated aortic second sound, a moderate atheroma, with a pulse of increased tension, would together be suspiciously suggestive of a contracted kidney even in the absence of any definite urinary evidences of the disease.

In this condition, with urine of low specific gravity, albumin, never present in more than minute quantity, is often absent for days together. This necessitates delicate tests and repeated examinations. If Heller's test is used the test-tube should be set aside for fifteen minutes as a trace may not show for that length of time.[9]

That there is agreement of authorities in regard to the *intermittent presence only* of albumin in many cases of chronic interstitial nephritis makes obvious the inadequacy of the single examination of urine required by most companies in ordinary cases.

The proportion of from 8 to 12 per cent. of death losses from kidney diseases, as referred to before, leads me to suggest that, in my opinion, in applicants past forty years of age life insurance companies would do wisely to require several examinations of urine for albumin, even though there be nothing suspicious in that first presented; and that a large saving would be effected, too, in death losses, if in addition the companies were willing to pay an extra fee for the use of the centrifuge and the microscope in the examination of the urine in all cases in which the applicant has passed the forty-year mark.

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MEDICAL PROGRESS.

Clinical Value of Some Newer Hypnotics.—A common reason for incorrect opinion in regard to the value of hypnotics is the fact that in many cases the mental suggestion acts as powerfully as the drug itself. Another error arises from the fact that a patient who has been sleepless for several nights will frequently sleep on the testing night without any drug. A. E. BROWNRIGG (*Boston Med.* and *Surg Jour.*, July 18, 1901), in testing the relative merits of dormiol, chloretone and hedonal, selected cases which offered no probability of natural sleep on account of continuous nervous unrest. He concludes that dormiol is the most easily administered. Both dormiol and hedonal proved perfectly safe in ordinary dosage, even when given repeatedly to feeble patients. Dormiol excels in rapidity of action. Hedonal and dormiol are more purely hypnotic in their action than chloretone, and both give refreshing rest. The duration of the sleep with dormiol is somewhat longer than with chloretone and much longer than the sleep produced by hedonal. After the sleep produced by chloretone there is a tendency to drowsiness for some hours. The very defects of chloretone, however, make it valuable in certain selected cases. Dormiol, while not the most powerful sedative we possess, answers well the requirements for a generally serviceable hypnotic. Hedonal is especially applicable to slight forms of insomnia unassociated with bodily pain or severe mental excitement.

A Modified Plaster Splint.—J. R. BENSON (*Lancet*, June 29, 1901) has found the following a convenient and serviceable hinge plaster splint. The coverings are of flannel, outer and inner. The width of each is the length of the splint, for example, from the knee to the ankle. The length of the inner covering

permits it to pass twice around the limb, so that the redundancy may be folded back upon itself. The length of the outer covering encircles the limb half way. There the excess of the inner compensates for the deficiency of the outer. At a point corresponding with half the length of each a seam is run fastening the two together in a hinge, which is parallel with the width. This seam therefore embraces *two* thicknesses of the flannel. The pieces are now folded upon the hinge and a second seam is run a quarter-inch from the first through the *four* layers of flannel as they thus lie each to each. This second seam now becomes the true axis of the hinge, while the former creates a convenient strengthening ridge. Between the outer and inner flannel layers on either side of the hinge, the stiffening of plaster of Paris is to be inserted. The hinge-ridge passes best down the front of the limb or the side parallel with the long axis. The larger or inner piece is now wrapped about the limb and tacked in a straight line just opposite the hinge line. Between these points the plaster is applied as a bilateral molded splint and the outer flap of flannel is laid over it reinforced by the return folds of the long inner flannel. The whole is then covered till dry with an ordinary roller bandage. When the splint is hard the bandage is removed, the tacking is cut and a beautiful hinged splint is formed.

Presence of Specific Antibodies in the Blood of Animals Treated With Different Sera; Also Their Use in Legal Medicine.—The recent discovery of specific precipitates, produced experimentally in the body, which act upon various bacterial products, milks, peptone, egg-albumin and human blood, has led G. H. NUTTALL and F. M. DINKELSPIEL (*Jour. of Hygiene*, July, 1901) to investigate this subject. In their experiments only rabbits were used and the blood, pleuritic exudate, etc., were injected intraperitoneally in quantities of 5 to 10 c.c., beginning with the smaller dose and never exceeding the larger. Effective antisera were obtained after the fifth or sixth injection. They treated thus some sixteen rabbits with dog, sheep, ox, horse and cat sera, also with defibrinated blood and pleuritic exudate. Their conclusions confirm and extend the observations of others with regard to the formation of specific precipitates in the blood of animals so treated. These precipitates are specific although they may produce a slight reaction with the sera of allied animals. The substances in the serum which bring about the formation of these bodies are remarkably stable. This new test can be successfully applied to a blood which has been mixed with that of several other animals and it is the most delicate means hitherto discovered of differentiating bloods. It is to be expected that it will be put to forensic use.

Bacteriology of Vaccinia and Smallpox.—Basing his work upon the postulates that, in order to establish the pathogenesis of any given micro-organism to any specific disease, the organism must be constantly present, that it must be present in sufficient amount and in the proper location to account for the symptoms, and that it must be possible to inoculate it in pure culture into animals and produce the characteristic symptoms, M. FUNK (*Ctlblt. f. Bak.*, July 5, 1901) has investigated the bacteriology of vaccinia and variola. Upon discovering that he had to do with a protozoa of which there could be no culture in a bacteriological sense, he adopted the use of emulsions of these organisms and proved their pathogenesis to these diseases by successful animal inoculation and the production of an artificial immunity. Pus taken from a vaccine pustule remains sterile on all culture media and microscopical examination shows no bacteria. Vaccine lymph ready for use, taken from a great variety of sources, shows a great number of bacteria, the majority of which are saprophites, only a few being pathogenic and none of these being common to all varieties of lymph. This lymph when preserved for three or four months becomes sterile, probably due to the presence of glycerin, yet this sterile lymph is always active and produces typical vaccine pustules. From these facts he concludes that vaccinia is not a bacterial disease. All vaccine lymphs also contain protozoic cells some of which are filled with spores and are then known as "sporidium vaccinale." These may be easily confounded with epithelial cells if they are not observed by means of the "hanging-drop" technic. There are also free spores present in the fluid. By emulsifying these spore-filled cells in sterile bouillon and injecting this into animals he was able to produce typical vaccine pustules and also to produce an immunity to the inoculation with ordinary vaccine lymph. He therefore concludes that these bodies are the cause of vaccinia. Pus from smallpox pustules shows the abundant presence of these bodies. By means of the "hanging-drop" method and a suitable temperature, he was able to see these protozoic cells sprout and the spores develop into new cells. These bodies, taken from smallpox pustules, inoculated into calves produce true cowpox and confer immunity thereto. Hence he believes that vaccinia and smallpox are identical affections.

Congenital Lymphadenoma.—E. BONNAIRE and DECLOUX (*La Presse Méd.*, July 13, 1901) reported the case of a child who two days after its birth was brought to the hospital because of its weakness. The large abdomen contrasted strongly with the emaciated trunk and head. The weight of the infant was only 1,700 grams. The skin was very white, the features pinched and the lower extremities edematous. Physical examination revealed ascites and a regularly-enlarged liver extending to the margin of the pelvis. A voluminous mass was felt in the left hypochondrium, resembling

an enlarged syphilitic spleen, and the clinical diagnosis of congenital syphilis was made. The ascites was attributed to the supposedly sclerotic liver and the edema of the extremities to the pressure of the ascitic fluid. Cyanosis developed three weeks after birth and death followed two days later. The autopsy revealed whitish nodules, varying from 1 to 5 millimeters in diameter, in the parietal pleura, the parietal pericardium, peritoneum, and mesentery. Submucous nodules were found in the stomach and intestine, and the enlarged liver was strewn with whitish nodules of varying size. The spleen was macroscopically normal. The mass which had been palpated on the left side proved to be the suprarenal capsule, which entirely covered the subjacent kidney, the latter being normal in size and structure. Microscopically the liver, pancreas, suprarenal capsule, spleen, lungs, pleuræ and pericardium were found to be invaded by adenoid tissue.

Practical Blood Examination.—The scope of practical blood-examination at present is stated by H. F. Hewes *(Boston Med. and Surg. Jour.*, Aug. 1, 1901) as follows: (1) The determination of the existence or non-existence of anemia and, if present, of its severity and type. (2) The determination of leucocytosis, its extent and type, including the diagnosis of myelogenous and lymphatic leucemia. (3) The determination of the presence or absence of blood-parasites, including diagnosis of malaria, filaria sanguinis hominis, and relapsing fever. (4) The determination of the existence of definite serum reactions as the Widal test for typhoid. (5) The determination of the presence in the blood of bacterial organisms; that is, of septicemia. Nine-tenths of all clinical blood-work may be done by the employment of two very simple methods of examination, namely, the estimation of the hemoglobin and the examination of a stained specimen of blood. The examination of fresh specimens of blood and the use of counting methods furnish added knowledge, which, however, is frequently not necessary for diagnosis. More recently developed methods of equal practicability as yet lack the testimony of extended experience in regard to their usefulness. The most important and promising of these methods is the test for iodophilia, said to be of value in conditions of suppuration (except in tuberculosis) and in croupous pneumonia.

A Ramifying Diphtheria Bacillus.—A. Cache *(Ctlblt. f. Bak. u. Infect.*, July 8, 1901) makes further study of a ramifying bacillus found by Ouchinsky in 1900 in a tube of his mineral media in which he had sown some months previous diphtheria bacilli. He made transplants from the original culture into several new tubes of this mineral media and incubated these for three months. At the end of this time lamellæ were present in the bottom of these tubes. These on microscopical examination were found to be composed of ramifying threads. From these transplants were made into bouillon, agar, and gelatin. On gelatin and agar the growth produced a membranous formation firmly attached to the surface of the media. In bouillon no cloudiness was produced, but the formation of small white flocculi was noted. By repeated transplants into bouillon, agar and gelatin, he was able to obtain a micro-organism morphologically identical with the diphtheria bacillus, pathogenic for guinea-pigs in from thirty-six to forty hours, and producing pathological lesions characteristic of diphtheria. He thinks, therefore, that these micro-organisms were genuine diphtheria bacilli. He believes that the microscopical and cultural methods employed exclude the supposition that contamination with some filiform organism was present or that he was dealing with a case of symbiosis.

Treatment of Tuberculous Lymphadenitis.—R. Hammerschlag *(Prager med. Woch.*, July 18, 1901) states that analysis of statistics shows a higher percentage of cures by the well-known iodoform-glycerin injections than by extirpation of enlarged glands. The former method of treatment is favored also for the following reasons: It is simple, safe in the hands of the general practitioner, leaves no scar, is relatively painless, and requires no cessation of occupation on the part of the patient. No matter how the superficial and accessible cervical glands are treated, the far more dangerous bronchial and mesenteric nodes remain.

A Case of Cervical and Bulbar Tabes with Necropsy.—The autopsy in this case was performed by W. G. Spiller *(Amer. Jour. Med. Sc.*, Aug., 1901) who reports the following important findings: Degeneration of the posterior roots of the cord especially in the middle and upper thoracic region and on the left side in the lower cervical region. No distinct degeneration of the columns of Goll; very slight degeneration of the columns of Burdach. Atrophy of inferior part of the left twelfth nucleus. Degeneration of the left descending root of ninth and tenth nerves. Degeneration of the spinal root of each fifth nerve. Atrophy and changes in the nuclei of the oculomotor nerve. In the history of the case reported by S. Solis Cohen the following data are noted: Acquisition of syphilis some years before nervous symptoms developed; attacks of nocturnal incontinuence of urine beginning in 1872: ptosis of right eye in 1879; varying contraction and dilatation of the pupils; weakness of facial muscles; difficulty of mastication and deglutition; atrophy of the tongue; disturbance of sensation for temperature and pain; griping abdominal pains; neuralgic pains in lower limbs; "suspicious grayness" of the optic disc; inequality of pupils; loss of light reflex; loss of power of accommodation; failure of vision —all observed in 1888—loss of sexual power. Later there developed atrophy of the upper limbs; pain in ulnar distribution of right hand.

There was no incoordination in the upper limb movements. In 1889 the knee-jerk was still well preserved, which accords with the necropsy finding of an almost complete integrity of the posterior roots of the lumbar region.

Pathogenesis of Tumors.—Charles Powell White (*Jour. of Path. and Bac.*, June, 1901) reviews the theories which have been advanced to explain the origin of tumors, the relation of tumors to other pathological processes, and the growth of special tumors. He concludes that as a rule they have their origin in normal tissue-cells. The extrinsic causes of tumor formation, as far as they are known, do not differ essentially from the extrinsic causes of inflammation, etc. In the case of tumors we cannot often determine these causes; the parts, however, being in a very unstable equilibrium, a very slight cause would be able to disturb the relative position. The essential differences between progressive and reparative processes lie in the condition of the body with respect to equilibrium. In the first case this is unstable and in the second stable. It is not possible at the present day to say in what this difference actually consists. Most tumors grow by centrifugal growth. In the case of carcinoma, however, it is possible that centripetal growth may play a small part in the formation of tumor. He thinks that the treatment should not only be local, but should also be directed to the general condition of the patient.

Changes in Polymorphonuclear Neutrophilic Leucocytes in Infectious Diseases.—The existence of structural alterations in polymorphonuclear leucocytes is said by H. Hirschfeld (*Berlin klin. Woch.*, July 22, 1901) to be characteristic of certain infectious diseases. The alterations in question are not apparent when fresh specimens are stained with Ehrlich's triacid stain, but are seen when methylene blue or methylene green is used. In ordinary blood the granules of polymorphonuclear leucocytes are refractory to methylene blue, while in lobar pneumonia, measles with bronchopneumonia, scarlatina, and acute phthisis with high fever, the granules referred to show an affinity for this stain. The granules may be distributed through the protoplasm, as are normal neutrophilic granules, or may be concentrated in certain areas to the exclusion of others. The alteration sometimes affects all the polymorphonuclear cells, but may involve only a portion of the whole number. The reaction was obtained by the use of dry cover-glass preparations, fixed either with heat or alcohol, and stained with a 1-250 solution of methylene blue.

Anesthetics in Heart Disease.—The results of a study of 142 cases suffering from various forms of heart disease and operated on under anesthesia for various minor and grave troubles are presented by J. M. T. Finney (*Amer. Jour. Med Sc.*, Aug., 1901). From a comparison of the behavior of these cases with others operated upon for similar affections under the same conditions, the author concludes that in the myocardial affections only do anesthetics exert any markedly bad effects. In valvular disease their influence is slight, but appreciable; in functional disturbances, insignificant. To seven cases suffering from myocarditis ether was given; to one, chloroform and ether Five took ether badly and three took it well. In the case to which chloroform was administered it had to be discontinued and ether substituted on account of rapid, irregular and weak pulse, cyanosis and disturbed respiration.

Cardiac Hypertrophy.—John Gutch (*Jour. of Path. and Bac.*, June, 1901) has pursued investigations to ascertain whether cardiac hypertrophy is brought about by a numerical increase of the muscle fibers, an increase in the size of the individual fibers or by a combination of both of these factors. He took specimens of the heart muscle from four locations, namely, left ventricular wall at the junction of the upper with the middle third and near the ventricular septum; muscularis papillaris of the mitral valve; right ventricle, front wall of the junction of the upper with the middle third; muscularis papillaris of the tricuspid valve. He employed a micrometer eye-piece one division in the scale of which was equal to .0037 millimeters. One hundred muscular fibers were measured in each specimen. As the result of his work he believes that the increase in the size of the heart is largely due to a hypertrophy of the individual muscular fibers. The increase in the breadth of the fibers is not sufficient to account for the whole increase in the weight of the heart. Some hypertrophied hearts, especially those of interstitial nephritis, are more difficult to tease out than is the normal muscle. This probably depends upon an increase of interstitial tissue which can be seen in teased-out specimens. It is at least probable that along with the increase in breadth there is also an increase in length. These factors are sufficient to account for the whole increase in weight without supposing that any numerical hyperplasia of fibers takes place, while on the other hand no direct evidence of such hyperplasia, such as karyomitosis, has ever been brought forward.

Tracheal Tug in Conditions Other Than Aortic Aneurism.—Henry Sewall (*Amer. Jour. Med. Sc.*, Aug., 1901) points out that a tracheal tug quite palpable in character is in many cases associated with and dependent upon adhesions of the left pleura. Diminished extensibility of the lung tends to produce the same phenomenon, and the tug is most pronounced when these conditions are combined. In normal individuals a laryngeal jerk may likewise follow the heart-beat and the proportion of normal males manifesting the sign is double that of normal females. This is explained by the predominance of the diaphrag-

matic type of respiration in the male. The descent of the heart with the inspiratory movement of the diaphragm may so press the aortic arch upon the left bronchus as to impart to the trachea the aortic pulse, recognized at the larynx as a palpable tug.

Treatment of Urinary Infiltration, Urinary Abscess and Fistulæ.—Infiltration results usually from stricture and hence the site of escape is commonly found to be just posterior to the bulbous urethra, where stricture is apt to occur, says H. Hartmann (*La Presse Méd.*, July 13, 1901). Two principles govern treatment; first, give free means of exit to the urine which has already found its way into the tissues; second, prevent the further escape of urine. In making free incisions to facilitate the removal of infiltrated urine, this writer prefers the bistoury to the thermocautery. Parallel incisions are recommended at distances of three to four centimeters. A wet dressing is then applied, or, to control hemorrhage the better, a dressing of iodoform gauze. By means of a perineal incision a drainage tube is introduced to carry off whatever urine may continue to find its way through the urethral lesion. The removal of the stricture is essential, but urethrotomy, if necessary, should be postponed until the tissues are restored to a healthy condition. In the treatment of urinary abscess it may be regarded as a tumor and totally extirpated, or it may be incised and drained like a common abscess.

Serumtherapy in Typhoid Infection.—E. W. Ainsley-Walker (*Jour. of Path. and Bac.*, June, 1901) has undertaken experimental research in order to determine, as nearly as possible, how far the value of sera was effected by the variety of the bacillus typhosus employed and what modification if any resulted from the employment of several varieties either together or in succession; also the relation of the colon bacillus to the immunity produced. After reviewing the methods used by Pfeiffer, Kolle and Bokenham, in preparing these sera, he concludes as follows: (1) There is evidence that a serum can be obtained by the immunization of horses against the bacillus typhosus. (2) The initial stages of the preparation may be greatly shortened by the method of Bokenham. (3) A high degree of immunity must be obtained and the use of living cultures in the later stages is desirable. (4) The serum must be made widely polyvalent by the use of as many and largely different races of typhoid bacilli as practicable. (5) The relative value of the serum obtained may be determined by its relative agglutinative power. (6) It is an open question whether the efficiency of the serum might not be further increased by immunization of horses against the colon bacillus also by the addition to the serum of a certain proportion of anticoli serum from a horse treated with that organism.

Cancer of the Uterine Neck.—It is maintained by J. M. Baldy (*Jour. of Amer. Med. Asso.*, Aug. 3, 1901) that cancer of the neck of the womb, as far as results go to-day, is practically incurable. A careful analysis of reliable statistics, says this author, will show that where 20 to 60 per cent of cures are claimed, the percentage of real cures is nearer 2 to 5 per cent. Hemorrhage, with beginning loss of flesh and strength, is the diagnostic feature of the early stages. Where there is a single show of blood several years after the menopause, no matter from what exciting cause (traumatism excluded), cancer should always be suspected. Even during a woman's menstrual life, the family doctor should suspect cancer in every case of irregular bleeding not otherwise readily explainable. Even very minute quantities of blood appearing at times incompatible with the physiologic flow demand rigid attention.

Hemolysis.—The efficacy of transfusion of blood has been doubted for some time on account of the suspicion that the blood of one animal acts as a toxic agent to the blood-cells of another. Transfusion, even of blood from one person to another, has now been generally discarded, since the susceptibility to hemolysis has become so thoroughly understood. S. J. Meltzer (*Med. Rec.*, Aug. 3. 1901) has made a careful study of the action of the blood of one animal upon the blood of another and finds that when a bullock's blood, for instance, is injected into the peritoneal cavity of a rabbit it soon becomes so changed that it loses a part of its power to cause a destruction of the blood-cells of the rabbit when injected into the rabbit's jugular vein. Again, the normal serum of a guinea-pig which has very little or no effect upon the red corpuscles of a rabbit, may acquire a marked hemolytic power if the guinea-pig is treated several times by subcutaneous injections of rabbit's blood. This is called "hemolysis by immunization," and such facts as this disclose the possibility of various interesting and valuable therapeutic measures. One practical application is found in the fact that by injecting human blood into rabbits the serum of the latter is caused to take on a characteristic turbidity and a flocculent deposit is caused in the human blood even if this is in the form of an old small dry spot. Human blood may thus be distinguished from that of any other animal with absolute certainty, except from that of monkeys.

Mental Disturbances in Cardiac Disease.—Psychical disturbances in cases of cardiac trouble are extremely common, but very little attention is paid to the exact causes of the trouble. A. Zederbaum (*N. Y. Med. Jour.*, July 27, 1901) says that there is no consensus of opinion among clinicians as to the causal relation between abnormal functions of a diseased heart and these mental disorders. It is easily understood, however, how the nutrition of the brain would be greatly influenced by an impaired circulation. Altogether, psychoses are more frequently observed in connection with aortic defects than in failure of the mitral valves. The symptoms of mental disturbance here partake more of the nature of mania and resemble the delirium of an alcoholic pneumonia. Extreme irritability, ex-

citement, fretfulness, restlessness and inconsistency make it sometimes very difficult to control the patient. Suspicions of insanity may even enter the minds of the observers and at times outbreaks of real mania do occur. Troublesome and exhaustive sleeplessness are especially noticeable in aortic insufficiency. Mania and melancholia seem to be the most common forms of mental alienation in cardiac cases and these are also most prevalent in cases of puerperal insanity which the author believes depend largely on the cardiac condition.

Treatment of Infantile Diarrhea.—W. H. Robey, Jr. (*Phila. Med. Jour.*, July 27, 1901) states that, although the specific cause of infantile diarrhea is unknown, the condition is first a local one, due to the toxic products of enormously-increased numbers of bacteria, and later constitutional symptoms develop from the absorption of these products. The treatment is as follows: (*a*) Cleanse the bowel of bacteria and their toxic products by the use of one grain of calomel in one-tenth-grain doses at half-hour intervals, combined with colon irrigations. (*b*) Provide unsuitable culture media for the bacteria by withholding food for twenty-four hours and giving sterile water at frequent intervals. It is perhaps well to allow the mother to think that she is giving a food in order to carry out this important part of the treatment. For this purpose albumin-water (whites of two eggs, a pint of boiled water, a pinch of salt and a teaspoonful of brandy) may be employed, a half a teacupful being given every two hours. Vomiting may be relieved by washing the stomach, using a soft rubber catheter, and a high temperature lowered by a tepid bath. After twenty-four hours the child should be put on a weak modification of sterilized milk. (*c*) Soothe an irritated intestine when the long-continued condition makes it necessary. (*d*) Support the patient against constitutional symptoms, as in other acute diseases of childhood. (*e*) Guard against infection of others by isolation, when possible, and scrupulous cleanliness.

Ruptured Uterus in a Multipara.—J. Pollock Simpson (*Brit. Med. Jour.*, July 13, 1901) reports a case in which the direct cause of rupture seems undoubtedly to have been due to the struggles of the child. These violent paroxysms were induced by the mother's chopping off the protruding arm with a bread knife. It was a posthumous child, but the husband had been dead twelve months. The mother in her effort to conceal the birth had adopted this radical method of accouchement and the child retaliated with lethal interest.

Diplococcus Rheumaticus.—F. J. Poynton and A. Paine (*Lancet*, July 13, 1901) report on arthritis produced in rabbits by the intravenous injection of a diplococcus isolated from cases of rheumatic fever. It is a small germ which they have demonstrated in eighteen cases. They believe it to be identical with the diplococcus of Triboulet and Wassermann. Their conclusions, deduced from a large number of cases of arthritis in rabbits are as follows: Arthritis is frequent, but not invariable. It is a polyarthritis, affecting especially the largest joints. The severity varies and recovery is either partial or complete. The exudations are clear, blood-stained, turbid or fibrino-cellular. The germ is found in the exudations, but with difficulty in the most acute and in the chronic cases. It probably gains access to the joints by the blood capillaries in the areolar layer of the joint capsule.

Myelopathic Albumosuria.—T. R. Bradshaw (*Brit. Med. Jour.*, July 13, 1901) reports a case of this rare disorder, making the total sixteen. It illustrates two important points, one of which is new. (1) The presence of albumose in the urine is the earliest symptom of the disease and it exists for months without evidence of failing health or local signs of alteration in the skeleton. (2) The albumose is first excreted in small amounts, but, as in many cases of ordinary albuminuria, since it causes no inconvenience, it is often undiscovered till the disease is far advanced.

Recurrence of Experimental Malaria.—P. Thurburn Manson (*Brit. Med.* Jour., July 13, 1901) cites his own case. He was exposed to the bites of mosquitoes fed in Rome on a case of benign tertian ague and in ten days developed a typical tertian fever. Quinine treatment was continued for three months. Nine months from the time he was bitten Dr. Manson developed symptoms of malaria. These were sufficiently severe to confine him to bed; his temperature rose to 103° F. Blood films showed both young and old forms of the parasite of double tertian ague.

Diachylon as an Abortifacient.—W. Wraugham of Wadsley (*Brit. Med. Jour.*, July 13, 1901) reports the alarming increase of women who are more or less seriously injured by the use of lead pills administered by midwives and abortionists. Just as the use of phosphorus, arsenic and other poisons, is swayed by fashion and interestingly governed by locality, the exhibition of this most dangerous abortifacient is more or less of a fad just now and is restricted to Leicester, Birmingham and Sheffield. The important points gathered from a study of five cases are as follows: The primary effect of the poison is on the nervous system,—not on the stomach nor gut. No less than four cases presented grave optic neuritis and ocular paralysis. The incubation period of lead, if such it might be termed, is shown to extend over several weeks and frequently there were no symptoms till after the drug had been stopped. The purely social-economic side of this question, quite apart from any ethical considerations, is of vast import. Particularly is this true when one considers that not only are the mothers almost invariably killed or permanently crippled—blindness being very frequent—but the children occasionally survive to drag out a helpless life at the expense of the State. The writer ably asks why, if the Home Secretary be notified of the industrial forms of lead-poisoning, he should be kept in ignorance of this, the most pernicious of all.

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DIURETICS IN KIDNEY DISEASE.

A PROPER study of diuretic medication presupposes a knowledge of the physiological phenomena underlying diuresis. While many facts are known regarding the grosser mechanical factors concerned in such action, it is unfortunate that we are far from knowing the more intricate and subtle changes that take place in the renal tissues, especially since painstaking observations have been in progress for at least fifty years.

From the first anatomical studies of Malpighi and Henle, and the physiological researches of Bowman, to the present time, hypotheses as to the relative importance of this or that histological element as the active factor in the elimination of the various urinary constituents, liquid and solid, have had their brief day on the stage of popular belief and have then passed into the realm of the disproved, if not forgotten.

In the present issue of the MEDICAL NEWS we present a series of papers bearing on disease of the kidneys and in the report of the investigations of Dr. Elliott is set forth a noteworthy contribution to the eminently practical problem of the relationship of diuretic medication to renal disease, taking into account the present status of the much-vexed question of kidney physiology and diuretic action.

At the same time we would call the attention of our readers to an interesting research made by Henri Anten (*Archives Internationales de Pharmacodynamie et de Thérapie*, Vol. VIII., fasc. v., vi) on the diuretic action of caffeine and theobromine. This investigator has gone over the entire ground and, while arriving at many conclusions already well grounded, has served to establish more fully the principles that should guide one in the use of the xanthin derivative group of drugs.

He shows that, as a primary consideration, it may be taken as proven that the epithelium of the convoluted tubules of the ascending loop of Henle is the important factor in the elimination of uric acid, in major part at least, and, it may be in less degree, urea. He moreover emphasizes the fact, now fairly well established, that the xanthin bodies stimulate renal epithelium and thus aid in the elimination of nitrogenous substances. In marked contrast to this action of the xanthin bodies is the influence of salines, which by stimulating the glomeruli favor the elimination of water and of inorganic salts, notably the chlorides.

The xanthin bodies then by their specific action in stimulating renal epithelium, bring about increased elimination of urea, water, nitrogenous bodies and it may be of some salts as well, and thus render the blood poor in urea and in salines; it thereby eliminates less of these bodies as the diuretic action progresses; on the other hand, the saline diuretics incite a watery diuresis which renders the blood richer in uric acid and urea.

Several practical lessons are suggested by these results; thus, in acute parenchymatous disease of the kidneys, as Elliott has already pointed out, diuretics may be of little avail, certainly the xanthin diuretics, caffeine and theobromine, are contra-indicated; whereas in subacute and chronic conditions, associated with diminished uric acid and urea output, they may prove distinctly valuable. A further interesting dietetic factor is brought into prominence, namely, the use of nitrogenous food, especially those rich in proteids which in their normal katabolism break down to xanthin bodies,, guanin, adenin, etc. From early days it has been taught that meats should be avoided, and certainly for the acute

stages the reasons are apparent, but it is quite an open question whether or not a limited amount of meat might not prove at least harmless in the treatment of chronic Bright's disease.

DOG-DAYS AND RABIES.

WE are passing through what are called the dog-days. In many parts of the country local tradition gives this name especially to the latter part of July and the beginning of August. The exact limits of this supposedly fell season are not definitely settled, for all during these two months it is popularly credited that dogs are much more liable to go mad. The heat and lack of sufficient water are supposed to be the active agents in the increase of madness among dogs at this time, and many elaborate theories have been evolved to account for the occurrence of the disease.

It seems almost too bad to take away the occasion for this brilliant theorizing, but the facts are all against the supposition that more dogs go mad in the summer than in other seasons. For so long as we have accurate statistics on the subject, rabies has been more frequent in the latter months of winter and the beginning of spring than at other times of the year.

As a matter of fact the dog-days are so-called, not with any reference to our domestic pet animals, but because Sirius, the dog-star, is during July and August in its heliacal ascendant. The Latins had the habit of calling this star simply *canis*, the dog. The popular imagination, after the original derivation of the term dog-days—the time of the dog-star—was lost, clothed the words with a new significance. This popular error has been and is yet, the source of no little apprehension. It is practically only at this time that the general public take any interest in the possible spread of rabies, because dogs are allowed to run loose without let or hindrance. At all other times the great principle of personal liberty is supposed to be sufficient justification for every citizen maintaining his portion of the nuisance that the presence of dogs on our city streets involves.

Rabies or hydrophobia is not a common disease, but careful investigation shows that the affection is on the increase in this country. D. E. Salmon, Chief of the Bureau of Animal Industry of the United States Department of Agriculture, makes the following statement in an article in the Year-Book of the Department for 1900: "It may safely be concluded that instead of being a much rarer disease than is generally supposed, rabies is a much more common disease than we had reason to expect." Salmon only reechoes the views of all the Boards of Health throughout the country which have seriously taken up the investigation of the disease.

It used to be a favorite theory of many people, including even some medical men, that rabies did not exist at all or, at least, did not exist in this country. Its supposed symptoms were set down as neurotic manifestations in hysterical or high-strung persons on whom the stories of hydrophobia following dog-bite produced a profound effect. American physicians who harbored any such notions were rudely shocked by finding how more and more seriously the disease was taken by European medical and civil authorities. No important nation in Europe is now without special regulations for the prevention of the disease and special stations for its specific treatment.

Well-authenticated cases of rabies occur in the hospitals of our large cities every few months. There is no longer any plausible reason to doubt the existence of the disease in this country. Since the establishment about two years ago by the German Government of a Pasteur Institute for the treatment of rabies, there is no reasonable excuse for the slur so common before, namely, that Pasteur had invented a treatment of which we know nothing for a disease the cause of which we know even less. Rabies is one of the diseases that, like tetanus, brings with it suffering and eventually death for those who were only just before strong and healthy. It is especially sad in its ravages, because it takes for its victims, as a rule, not the weaklings, but those who are in the prime of life and vigor. Its eradication therefore would be one of the unmixed blessings that sanitary regulation could confer on our generation.

It is almost needless to say that the disease does not originate even in animals because of heat or from lack of water, or from poor nourishment. Rabies is a specific disease the germ of which we do not as yet know, although we have now no doubt of its existence. The affection is spread by the inoculation of the virus of the disease into healthy animals or human beings. The saliva of affected individuals contains the germ of the disease and it is by this secretion that inoculation takes place. It affects many animals besides the dog, but dogs being practically the only animals allowed at liberty they are the usual transmitters of the disease. If all dogs in New York State were to be muzzled for six months, and thereafter all dogs imported into the State required to wear an effective muzzle for the same

length of time, we would be rid of the danger of rabies forever. The disease is not rare in this State and last winter its presence became so noteworthy in the Western part of the State as to excite serious alarm. The repressive measures mentioned would not seem severe even to the overwrought imaginations of our antivivisectionist friends. Their enforcement would be a cheap price to pay for the riddance from fear on the part of many timorous individuals that would follow.

There is no good reason why so many dogs should be allowed to run at large as at present. While it is a generally accepted axiom in public polity, it would be very hard to prove that every man who wishes has an inalienable, God-given right to own a dog and to allow that dog to be as much of a nuisance as his dogship wills and his master (or mistress) permits. It is probable that dogs are also bearers of diseases other than rabies. They are, for instance, by no means as immune to tuberculosis as was formerly thought. It seems likely that they are sometimes the source of human tuberculosis in children. Their relation to the echinococcus as the source of that parasite for human beings is well known. The dog-days and the apprehension of pet animals that they occasion might well serve as an opportunity to physicians for the formation of a proper public opinion with regard to the utter inadvisability of allowing these animals the liberty of our streets, not alone during the hot weather, but at any season of the year.

WHERE TO SETTLE.

THIS unusually puzzling and all important question is occupying the minds of at least some hundreds of recent graduates in medicine. There are, naturally, many circumstances that must be taken into account in its answer.

So far as the material elements of the problem are concerned, the recent census furnishes some interesting statistical considerations. The number of inhabitants to doctors in this country is not large. There are for each physician only 1,215 people. In many States the number of inhabitants to each physician is much lower than this. Some of the States and territories are especially scant in their provision of physicians for possible patients. It might seem that in some of these inadequately-supplied States the recent graduate in medicine would find a welcome that is only too long delayed in regions medically better provided for.

Mississippi, for instance, has but one physician to every 1,548 inhabitants; New Mexico, one to every 1,406; North Dakota, one to every 1,347. There are more than 1,100 inhabitants to each physician in North Carolina, Minnesota and Wyoming. Utah, South Carolina, and Louisiana have more than 1,000 to each physician. On the other hand, the District of Columbia has but 325 inhabitants to each physician; California has only 392 people to go around to each doctor; Colorado, only 462; and Vermont, 477. In the case of California and Colorado, their reputation as health resorts evidently accounts for their surplus of physicians. Besides their normal number they have those from all parts of the country whose health requires their residence in an equable climate.

Among others of the States there are a number of surprises in the mode of distribution of physicians. Kansas, for instance, has one doctor for every 510 of population. Indiana comes next with one to every 519 inhabitants. Then Ohio with one to 529; Missouri, with one to 543; Iowa, with one to 562, Arkansas, one to 569; Massachusetts and Michigan, one to 575, Illinois, one to 583, and New York one to 596.

Prof. Thwing of Western Reserve University said not long ago that there was only one profession at present open to young men in which they could expect to make their living from the very beginning of their professional career. This is dentistry. According to the census figures, there is only one dentist to every 10,000 of population. Like the physicians they are thickest at the Capitol. There is in Washington, D. C., one dentist for every 1,250 inhabitants. Health reasons disturb the normal equilibrium of dentist distribution, as it does that of the physicians, and so California has one dentist to every 1,500 inhabitants. Massachusetts comes next in its support of the dental fraternity, about every 2,000 inhabitants providing a living for a dentist. New Hampshire, Vermont, Oregon, Illinois, Connecticut, Ohio and New York follow closely on Massachusetts in this respect.

For physicians it is evident that we have nearly reached the limit of professional numbers as far as medicine can be practised with due hope of economic success. It is evident, too, that the ranks of the dentist are rapidly filling up and that even now there are many places, especially in the more thickly-populated districts, where a dentist cannot expect to make a living for several years after he hangs out his sign.

ECHOES AND NEWS.

NEW YORK.

No More Consumptives for St. Luke's.—Current talk around St. Luke's Hospital is that the department for the treatment of consumptives at that institution, comprising fory-two beds for men and women patients, is about to be abandoned. The reason given in the gossip is that the hospital has no special advantages for treating this disease, and that the wards are so close to those for the general run of patients that there is grave danger of infection. No definite action can be taken until the next meeting of the Board of Trustees on the last Monday in September, and that if the subject is not taken up then it may be considered at the annual meeting of the board in October on St. Luke's Day.

Private Smallpox Hospital.—It has been rumored of late that a private hospital for smallpox patients is contemplated, although the project has not met with much approval either from official quarters or among physicians generally. Commenting on the proposition Dr. Cosby stated that if such a hospital were built by private parties it would have to be conducted under the supervision of the Health Department. He estimated that it would cost not less than $75,000 to put up the building, while the annual expenses would be about $25,000, which he said would hardly pay, as the disease fluctuates in regular periods, being most prevalent every five years.

Campaign Against Mosquitoes.—Should the kerosene campaign which Dr. A. H. Doty, Health Officer of the Port of New York, has inaugurated against the mosquitoes of Staten Island prove satisfactory, a general crusade against all the mosquito grounds in Greater New York may be started under the direction of the New York Board of Health. Commissioner Sexton has the question now under consideration.

Annihilating the Staten Island Mosquito.—Dr. Doty, Health Officer of the Port, has commenced war against the mosquito in this locality. Work on the district he has laid out for treatment, extending from the Narrows to New Dorp Lane, on the island, was somewhat delayed, as the apparatus for distributing oil was not ready. President Sexton of the Department of Health has assured Dr. Doty of his support, and has detailed men to help him in the work. All the swamps and marshy places in the district mapped out are to be inspected, and the breeding-places of the mosquitoes determined and treated with oil.

Prospect Park Lakes as a Mosquito Breeding-Ground.—The attention of the authorities has recently been called to the presence of a dark green scum which forms on the surface of the lakes in Prospect Park, Brooklyn. It is claimed that this scum forms an excellent breeding-ground for mosquitoes and thereby favors the dissemination of malaria. No action in the matter has yet been taken.

PHILADELPHIA.

A Record at Pennsylvania Hospital.—During the month ending July 28th the Pennsylvania Hospital treated more cases than during any similar period in its history. In the emergency wards 3,257 cases were attended to besides 1,798 cases in the dispensary. For the week ending July 6th the cases numbered 998, the largest day's record being 155.

Epidemic of Anthrax.—Cattle on the mountain near Tyrone are dying from anthrax. More than 20 animals have died and many more have the disease.

Test Oleomargerine Cases.—The Dairy and Food Department of the Department of Agriculture in Pennsylvania is to make test cases of a number of manufacturers of "oleo." The makers claim the right to give their product a trace of color and thus avoid the "full yellow" specified by law. The cases are to be tried in Pittsburg and carried to the Supreme Court in order to settle finally disputed points.

An Unusual Departure in Newspaper Ethics.—Under its new management the Philadelphia *Times* has taken a stand which it is sincerely hoped will be imitated by its contemporaries. The following resolutions passed recently by the Medico-Legal Society of this city are self-explanatory: "*Whereas*, the advertising of abortionists and their drugs, as well as other disreputable secret medicines, has for years been a notorious disgrace to the newspaperdom of this city, an evil seemingly without redress, and, *Whereas*, the Philadelphia *Times* under its new ownership has declared for a high ethical plane, avoiding all sensationalism, while at the same time furnishing 'all the naws that is fit to print,' excluding all medical and other questionable advertisements so as to make it indeed a newspaper fit for the family circle, therefore be it *Resolved* that the Medico-Legal Society of Philadelphia highly approves of the advanced stand taken by the *Times* and urges upon the medical profession generally its active support in aiding to carry out that journal's elevated ideals."

CHICAGO.

Suppressed Report of Self-Purification of Streams.—Several members of the Sanitary District Board are said to have suppressed reports setting forth the most elaborate scientific proof ever accumulated showing the self-purification of running streams. After having appropriated $2,500 of public funds for the preparation of the report and after having authorized its publication, they are said to have taken steps to keep the subject-matter of the report from being made public. The circumstance was brought to the surface when

President Alexander J. Jones was asked to permit access to the report made by several expert chemists who spent months making an examination of the waters of the drainage canal and the Illinois River. The experts are Prof. E. O. Jordan of the University of Chicago, Profs. Palmer and Burrill of the University of Illinois, and Prof. Adolph Gehrmann of the city laboratory. Political jealousy, lest the publication should reflect too much credit upon city officials, is alleged to have been the chief motive which actuated the suppression. The suggestion as to this motive comes from officials of the City Health Department. President Jones declares the report was suppressed so the material in it could be used by the Sanitary District in its defense against the attempts of the city of St. Louis to have the drainage canal closed by the courts. Should the report become public, says President Jones, its value as a defense would be injured. The report suppressed is said to show that the waters of the drainage canal are not polluting the waters of the Illinois River and that the alarm of St. Louis is unfounded. Before the waters of the river reach Peoria they are said to be absolutely pure. At that point they are contaminated by the Peoria distilleries. The river again becomes perfectly pure many miles north of the junction with the Mississippi River. Trustees of the Sanitary District are greatly elated over the action of the War Department in issuing orders to allow a swift flow of water through the canal during eight hours of the day. The hours specified are between 4 p.m., and midnight and the flow allowed is 300,000 cubic feet a minute, instead of 200,000 cubic feet, as is allowed during the remainder of the day.

Rush Will Admit Women.—Women hereafter will be admitted to the freshmen and sophomore classes of Rush Medical College. Trustees of the University of Chicago and of the college decided at their last meeting to make them eligible and to admit them to the higher classes also, when additions to the college buildings make that possible. The demand for medical instruction from women who wish to become trained nurses is one of the reasons for the change. Another change announced is the rejection in the medical college of the system of quarters upon which the university is founded.

Sell Ice Without License.—Police have been ordered to arrest ice peddlers who have not obtained a license. Secretary Pritchard of the Health Department has discovered that in the crowded district there is a nomadic lot of delivery wagons which peddle ice without securing the necessary permission. As the health authorities have no means to make tests of their product as to its purity, the sale of ice in this way is held to be extremely dangerous. In many cases the ice is totally unfit for use.

Asylum Is Crowded.—Members of the County Board have been appealed to by President Hanberg to provide additional accommodations for the inmates of the Dunning Asylum. He reported the institution as badly overcrowded and informed the Board that an addition, equipped for the housing of 200 of the feeble-minded wards of the county at an early date, is imperative. The communication shows that there are more than 1,600 inmates of the asylum. The wards are crowded so that many of the unfortunates must sleep on the floors, and, while nothing can be done toward providing funds for an addition before the first of the year, President Hanberg desires that the improvement be taken up in committee and plans made which may be carried out without delay as soon as an appropriation can be voted after the first of the year. It is estimated that the proposed addition will cost not less than $40,000. It has long been needed and President Hanberg says cannot be longer delayed if the county is to continue to care properly for the unfortunates dependent upon it.

Addition to Cook County Hospital.—An addition to the County Hospital is also under consideration and must be passed upon by the County Board before the first of the year. There is urgent demand for two more wards. At present there is no adequate provision for the care of patients suffering from skin diseases. Within the year $25,000 will have to be set aside for this purpose if the standard of the public service demanded of the hospital is maintained.

Milk to Be Confiscated.—Confiscation of shipments of milk is to be resorted to by the Health Department when it is found that the milk has been adulterated. It has been learned that the dealers in Chicago are not to blame in every case in which impure milk is found, but that there are shippers who put in formalin to preserve it. In some cases the dealer is ignorant of this and in others it is put in with his full knowledge. What the health officials have determined to do is to inspect the milk at the depot platforms and when the milk is found to be adulterated it will be emptied out on the track. In pursuing this course the Health Department has the hearty support of the Milk Shippers' Union. Secretary Farmer of that association said that he had investigated some cases where it was found that shippers used formalin. One shipper, he said, sold cream and milk either with or without formalin as ordered. Others put it in and the dealer who was fined was ignorant of the fact. In most cases, he says, these shippers are what are known as "scalpers." They are in the habit of buying up milk for creameries and when there is a scarcity in Chicago and the market is better than at the creameries they ship it here.

Typhoid in Lake Baths.—Typhoid fever is on the increase in Chicago, and the health offi-

cials are inclined to trace it directly to the bathing beaches which have been opened lately and to the recent rains. Chief Medical Inspector Herman Spalding of the Health Department of the city issued a warning to parents that, unless greater care was used by those children who visit the bathing beaches, the city would be in the throes of a typhoid-fever epidemic. There has been a marked increase in the number of cases of typhoid fever during the last days.

Increase in River Wards.—Dr. Spalding says that this indicates a remarkable increase, and the greater number of these cases are in the river wards, such as the Ninth, Tenth, Eleventh, Eighteenth and Nineteenth. He says that the wards where the children who patronize the bathing beaches on the south shore live are also showing a large increase in fever patients. "It is due to the bathing to a large extent," said Dr. Spalding. "I do not want to argue against bathing, because that is a very necessary thing for the health of the community; but the trouble is that boys and girls, and even men, who ought to know better, go into the lake and swallow the water while swimming. This water is polluted. Our experiments show that a rainfall of less than a quarter of an inch is sufficient to pollute the water of the lake along the shore, and every day you will see men on the pier dip up water from the lake and drink it. This is poisonous and results in typhoid fever in many cases. Even if those who bathe in the lake are careful not to take any of the water into their mouths while in the lake, they will wipe their lips with wet hands, which is equally as bad as taking the water into their mouths."

Tuberculosis.—Following the discussions at the recent Congress of Tuberculosis in London on the cure and possible eradication of the disease, the *London Sphere* has compiled a record of deaths in the world's largest cities which shows that Chicago has the lowest mortality rate from the diseae and Buda-pesth the highest.

GENERAL.

New Jersey Insane Asylum Investigation.—The investigation into the charges recently brought against the management of the State Asylum for the Insane is taking place in the presence of Gov. Voorhees, who nad been requested to attend. Dr. Baldwin, B. W. Andrews, and Judge Joseph Thompson, the three members of the hospital Board of Management, comprise the investigating committee. When the proceedings opened they announced that no allegations beyond those contained in the recent complaint of hospital attendants concerning the alleged inedible and insufficient food supplied to them would be considered by the committee. Other allegations, involving indiscretions, neglect, and mismanagement of both the patients and the business end of the institution are thus barred from the examination at this time.

New Hospital for Crippled Children.—A. C. Burrage of Boston has leased Bumkin's Island from Harvard University for 399 years, and will build a hospital on it, and make it a free summer home for the crippled children of Boston. The island is near Hull. It was given to Harvard College by Samuel Ward, who was a friend of John Harvard. The terms of Ward's will were such that the land could not be sold outright.

Transfer in Marine Hospital Service.—Surgeon Kinyoun, recently of San Francisco and now in charge of the Marine Hospital at Detroit, has been detailed to visit Japan and China to inspect the work of the Marine Hospital Service with special reference to the plague. Dr. Kinyoun was one of the Marine Hospital experts who was abused by San Franciscans for saying there were plague cases in "Chinatown."

University of California Appointment.—Dr. Archibald R. Ward of Ithaca, N. Y., has been appointed veterinarian of the Agricultural College of the University of California, a new position created by the Board of Regents. His work will be closely associated with that of Leroy Anderson, head of the Dairy School, buildings for which are now in course of construction.

Retirement of Surgeon-General of Navy.—The term of Surgeon-General W. K. Van Reypen, Chief of the Bureau of Medicine and Surgery in the Navy Department, will expire December 18th. Dr. Van Reypen will be retired from service in November, 1902, under the law. His services during and since the Spanish war undoubtedly will secure for him a reappointment to the head of the bureau, and that reappointment will assure to him retirement with the rank and pay of a Rear Admiral. What the officers of the Medical Corps are interested in is what will become of the office after Dr. Van Reypen has been put on the retired list. After his retirement there will be available several medical directors, whose terms are approaching completion, and it is thought the President may choose one of these, and thus give to the fortunate man the chance to retire with the highest rank. But it is also suggested that the President may overlook the medical directors and select a Medical Inspector for the place.

Sir William MacCormac on Wounds and Warfare.—The President of the Royal College of Surgeons, Sir William MacCormac, read a paper before the British Medical Association, recently in session at Cheltenham. He pointed out that the character of gunshot wounds had completely changed since his experiences in the Franco-Prussian war (when he was Surgeon-in-Chief to the Anglo-American ambulance). Not only was the severity of the

wounds diminished, but they were also less frequent; so the improvement made in weapons did not render the prosecution of war more difficult, as contended in some quarters. Only 6 per cent. of the wounded died.

Antisepsis on the Field of Honor.—This seems a year of odd duels in France, as it is also a year of other odd things there. The strangest encounter of all on the field of honor was that of Ernest Daudet, for whose moral guidance his father wrote "Sapho," and a journalist named Gérault Richard. It is stated that after the first attack, the point of Daudet's sword accidentally touched the ground, when the seconds intervened and stopped the contest until the blade could be disinfected. Afterward Daudet was wounded in the wrist, but, thanks to the antiseptic precautions taken by the seconds in this duel, which doubtless establishes a precedent, he is doing well, and will soon be able to use his sword arm again in defense of his honor.

Sir James Paget's Memoirs and Letters.—It seems that Sir James Paget, F.R.S., who died a few months ago and was honored with a memorial service in Westminster Abbey, left the manuscript of a work of "Memoirs and Letters" now in active preparation for publication under the editorship of one of the distinguished surgeon's sons, Stephen Paget. Although the Paget family is connected with several American families by marriage, undoubtedly the chief interest in the forthcoming publication will lie in the fact that the late Sir James included in his circle of patients and intimate friends some of the most conspicuous personages in the United Kingdom. The King and Queen were among his patients, as was Queen Victoria before them. His student days were passed at St. Bartholomew's Hospital, and he began to practise in 1857. We are looking forward with much eagerness to the publication of these letters which are sure to reflect the brilliant personality of a distinguished medical man.

No Secret Medicines Sold in Austria.—Carl Bailey Hurst, United States Consul General at Vienna, Austria, in a recent report to the State Department says, among other things:

"In consequence of many inquiries addressed to this Consulate General in the matter of the Government regulations in Austria regarding the importation and sale of patented medicinal and chemical preparations, I would report that the sale of 'arcana,' or secret remedies, has always been strictly forbidden in this monarchy. Trade in such medicines and advertisements of the same are under strict surveillance of the law. Further, those medicinal preparations of which the prescriptions are not open to inspection by physicians, or in the prescription of which the substance of the medicinal ingredients cannot be definitely recognized as to kind and quantity, may not be kept for sale in apothecaries. Only those manufactures may be considered as pharmaceutical specialties that contain drugs acknowledged to be medicinal remedies, as, for instance, balsam copaiba, oleum santali, and the like.

"Every new medicinal preparation intended for use by the public must be reported to the authorities, and its sale may not be begun until said authorities have found no reason to prohibit the same. Prescriptions of foreign medicines must be accompanied by precise directions for their preparation from the foreign manufacturer, and be provided with his signature and business stamp. Altogether excluded are cosmetics that by their labels, wrappers, and advertisements are affirmed to be efficacious in the removal of personal blemishes—impure skin, freckles, liver spots, and baldness—and are, therefore, qualified as remedies.

"The regulations in Austria in regard to the advertisement of patent medicines are likewise strict. All laudatory notices in local publications of cures and remedies coming from abroad constitute a transgression of the trade laws, and, under certain circumstances, foundation for complaint of unlicensed medical practice."

Consul Hossfeld of Trieste transmits, under date of July 12th, a report covering the same information. He adds:

"The Austrian law also undertakes to regulate the prices to be charged for patent medicines, for it provides that whenever the reasonableness of the price of such a remedy is questioned, it shall be rated on the basis of the official tariff promulgated in the Pharmacopœia Austriaca.

"Those of our manufacturing chemists who are disposed to take the Austrian public or sanitary authorities into their confidence will probably not find it very difficult to obtain the necesary permission for the sale of their products, but I doubt whether any business which they may do in this country will ever prove a source of great profit to them."

American Association of Obstetricians and Gynecologists.—This Association will hold its fourteenth annual meeting at the Hotel Hollenden, Cleveland, O., Tuesday, Wednesday and Thursday, September 17, 18 and 19, 1901, under the presidency of Dr. William E. D. Davis, of Birmingham, Ala. The committee of arrangements is composed of Dr. M. Rosenwasser, 722 Woodland Avenue and Dr. William H. Humiston, 122 Euclid Avenue, Cleveland, either of whom may be addressed concerning rooms or other local information regarding the meeting.

The following list of papers is offered:

The President's Address, William E. B. Davis, Birmingham; Indications for the Combined Vagino-Abdominal Operation of Hysterectomy, Rufus B. Hall, Cincinnati; A.

Method for Suspension of the Uterus, Robert T. Morris, New York; Tuberculous Peritonitis, Experimental and Clinical, John B. Murphy, Chicago; Report of a Case of Acute Pancreatitis and Fat Necrosis, Edward J. Ill, Newark; Pelvic and Abdominal Tumors Complicating Pregnancy, with Report of Cases, Rufus B. Hall, Cincinnati; Pathology and Treatment of Hourglass Stomach, with Report of Two Cases, Charles G. Cumston, Boston; Early Operations in Appendicitis and Method, Joseph Price, Philadelphia; The Undeveloped Uterus, C. L. Bonifield, Cincinnati; An Interesting Case of Tubo-Abdominal Pregnancy, Wm. H. Humiston, Cleveland; Report of a Case of Ruptured Tubal Pregnancy, Webb J. Kelly, Galion, O.; Diseases and Injuries of the Cervix Uteri and Their Treatment, Joel W. Hyde, Brooklyn; Extra-uterine Pregnancy; Report of Cases with Specimens, George S. Peck, Youngstown; Is Cæsarean Section Justifiable in Placenta Previa? E. Gustav Zinke, Cincinnati; Some Reflections on Ectopic Gestation, David Tod Gilliam, Columbus; Some Forms of Disease Involving the Uterine Appendages, Augustus P. Clarke, Cambridge; The Mechanical, or Combined Plastic and Mechanical Treatment of Retrodeviations of the Womb, M. Rosenwasser, Cleveland; A New Method of Opening the Abdomen in Gynecological Surgery, Charles G. Cumston, Boston; A Second Contribution to the Surgery of Gastric Ulcer, Henry Howitt, Guelph, Ont.; Indications, Technic, and Remote Results of Salpingostomy and of Resection and Ignipuncture of the Ovaries, with Tables of 104 Cases.

Obituary.—Dr. Henry Armgardt of 370 Leonard Street, Brooklyn, died in Harzburg, Germany, on July 31, 1901. He was fifty-two years of age. He began the practice of medicine in Chicago and later moved to New York city and finally to Brooklyn, where he practised continuously until he sailed for Europe on June 15th last. He was a Professor in the Eclectic Medical College of New York city. He was also a Freemason and a member of the Royal Arcanum.

Dr. Stephen Foss died at his residence, 15 Cornelia Street, Brooklyn, on August 1, 1901, aged 76 years. Dr. Foss was born in Portland, Me., and graduated from the Medical Department of Harvard University. He successfully practised in Brooklyn for many years, but about five years ago retired on account of blindness. He was a veteran of the War of the Rebellion and formerly a member of Warren Post, G. A. R.

Dr. Frank B. Bingham of Buffalo was killed shortly after noon August 2d, by a trolley car at Main and Summer Streets. Dr. Bingham was riding his wheel at the time.

Dr. James V. Kendall, one of the oldest surgeons of Central New York, died this week at his home in Baldwinsville, Onondaga County, N. Y. He was eighty-three years old, and had been surgeon of the 149th New York Volunteers. He was a member of the Assembly in 1869 and active in Republican politics.

Dr. Henry Buckingham Horlebeck, a former President of the American Public Health Association, and for twenty years the Health Officer of Charleston, N. C., died in that city early Friday morning. He was stricken with paralysis several months ago. Dr. Horlebeck was an authority on yellow fever. In his will he left instructions to have his body cremated and the ashes buried there. The body was shipped to a Staten Island crematory.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, July 27, 1901.

THE TUBERCULOSIS CONGRESS—A QUARREL AMONG THE GERMANS—A SCRAMBLE FOR PRESENTATION TO THE KING—KOCH AND HIS MEDAL—HIS SENSATIONAL UTTERANCE ON TUBERCULOUS MILK AND MEAT—VIRCHOW'S CRITICISM—RESOLUTIONS PASSED BY THE CONGRESS—ENTERTAINMENTS—AN EXPECTED SHOWER OF HONORS.

As I write the last echoes of the Tuberculosis Congress are dying away. The general impression is that the meeting has been a brilliant success. The attendance has been close on 2,000; almost every civilized government has been represented, and quite a crowd of more or less distinguished foreigners has added liveliness to the normal dulness of a British meeting. With one exception there has been no communication of an epoch-making character, but much solid work has been done in the various sections. The general press has given a considerable amount of space to reports of the proceedings, and has discussed the facts and proposals brought forward with a sense of their importance which is as novel as it is gratifying in English journals where medical matters are mostly totally neglected or treated as esoteric mysteries that concern only the doctors.

There was a hitch at the outset which, if it had not been set right, might have gone some way to imperil the success of the Congress. In Germany, and indeed on the Continent generally professional jealousies, if they do not run higher than among us, at least find more outspoken expression. In most German universities, as every one knows, there exists a system of dual professorship in the different branches of medical science which is admirably adapted to create jealousy and anger in the most celestial souls. Hence it is a general rule, to which there is hardly an exception, that the two professors, say of surgery, hate and despise each other and refer to each other in their lectures in the most contemptuous terms, to the delight and edification of the students. At Berlin Professors Gerhardt and von Leyden are the great Panjan-

drums of medicine, but like Society "lions" each when he hears his rival roaring thinks him a bore. The German leaders are in the habit of going to Congresses like the Highland Chiefs of old, "with their tails on," that is to say, with a bodyguard of devoted adherents who form a *claque* for them wherever they go. The Gerhardt and Leyden parties fell out on the first day of the Congress over some trumpery question as to the choice of a speaker on some ceremonial occasion. Like the Irish Members of the House of Commons at the time of the Parnell split, the discordant Teutons got a room for themselves in which to fight out their quarrel. When this matter was arranged, another row disturbed the philosophic calm of the Germanic mind. This time it was because some one who thought he should have had a place in the second row was relegated in the third. Such harmony is in immortal souls!

Another incident delightfully illustrative of the large-mindedness of the paragon of animals, man, occurred toward the end of the Congress. The King had been approached by some one who has the Royal ear with a suggestion that he should receive a certain number of the more prominent among the foreign members. His Majesty whose days are passed at present in decorating the British Army, intimated that this addition to his labors would bore him exceedingly. The proposal was therefore abandoned—rather to the relief of those on whom the delicate duty of selecting the persons to enjoy the beatific vision of Royalty would have devolved. But princes are proverbially fickle, and Edward the Seventh seems to have taken counsel with himself, and, probably feeling that as patron of the Congress it behooved him to do something to show an appearance of interest in it, determined to be on view to some of its members. The result was that late one afternoon he sent Sir William Broadbent, his physician in ordinary, a message that he would receive a batch of distinguished foreigners on the next day. When the news got abroad, Sir William Broadbent's door was besieged by a horde of excited representatives of various nationalities, each urging his claims to be presented. Not only physicians but Ambassadors crowded Sir William Broadbent's house, representing that if this or that official person were not included in the list there would be all sorts of international complications. How the conflicting claims were finally adjusted I do not know, but I have no doubt that Sir William Broadbent, who is a harmless sort of person, has innocently made a number of deadly enemies. One (officially) distinguished German, was, it appears, nowhere to be found. Every hotel in London was ransacked to find him, as it was impressed on those responsible for the selection of the elect to whom Royalty was to manifest itself that the most fearful consequences would follow if this particular official were not presented. He was found at last in some obscure lodging, sulking like Achilles in his tent, because as he fancied he had not been asked. It was with some difficulty that he was appeased and induced to honor the king of England by allowing himself to be presented to him.

Koch was not among those presented, but that appears to have been his own fault. He chose to go to a meeting of the British Institute of Public Health, to receive a medal which he thought he was to get from the hands of Lister. He was in blissful ignorance of the true status of the Institute in question which rightly or wrongly is not regarded with any particular favor by the medical profession. The distinction bestowed on Koch is not therefore looked upon here as of any great value. Koch appears to have discovered this for himself, for he went to Eastbourne where the meeting of the Institute of Public Health was being held by an afternoon train and returned to London by the next, having shed the luster of his countenance on the meeting for about a couple of hours.

The great sensation of the Congress has been Koch's denial of the infective power of bovine tuberculosis in man which has made all our butchers and farmers rejoice exceedingly. Its effect on the Congress can only be compared to that of a dynamite explosion. The airy way in which Koch asked the medical world to receive a new doctrine erected on the flimsiest basis of fact is a remarkable illustration of the degeneration which has overtaken one of the greatest scientific investigators of our time. It is too clear that success has turned his head, and that he cares more for "staggering" than for instructing humanity. His startling declaration that precautions against the use of tuberculous milk and meat are useless was delivered with the calm assurance of an infallible pope promulgating a dogma which the faithful are to receive on pain of damnation. His views were severely criticized by Lord Lister who was in the chair. Lister is the most courteous of men, and it is unusual for a chairman to criticize the utterances of a speaker whose sponsor he is for the occasion. But Lister criticized Koch very sharply, and he was greatly annoyed that he was represented in the newspapers as accepting his doctrine. Professor Nocard, the great veterinary authority who spoke afterward, contrived with the art of a consumate actor to overwhelm Koch with compliments, while conveying plainly to such of the audience as understood him that he considered the sensational statements of the inventor of the famous *Mittel* (which by the way he was induced to reveal is made from bacilli of human origin) not mistakes but deliberate lies!

Koch's views find little or no acceptance among English men of science, and they are almost universally rejected by his own countrymen. It is even insinuated that he and Professor Bernhard Fränkel are simply put forward as the exponents of the German Government and Agrarian party for some purposes of their own. Professor Virchow is reported to have said in an interview published by the Berlin *Lokal Anzeiger*: "I have combated for years the view of the hereditary transmission of tuberculosis, but for the rest I do not agree with Dr. Koch, and at the last meeting of

the Medical Society I spoke most strongly against Dr. Koch's deductions. Dr. Koch is not Rome and the last word has not been spoken." Of course this deliverance must be taken subject to discount as being that of a rival oracle. Virchow has ever since the days of the tuberculin boom lost no opportunity of expressing his disagreement with Koch's work.

Among the resolutions passed at the closing meeting of the Congress yesterday was one which had direct reference to Koch's new teaching. It was to the following effect: "That, in the opinion of this Congress, medical officers of health must use all the powers at their disposal and relax no effort to prevent the spread of tuberculosis by milk or meat." On the suggestion of Dr. Herron (whose guest, it may be mentioned in passing, Koch is), strongly supported by Dr. Farquharson, M.P., an addition was made to the resolution asking for an immediate official experimental inquiry into the identity of bovine and human tuberculosis. A summary of the other resolutions must suffice. Mr. Malcolm Morris, General Secretary of the Congress, moved that "Tuberculosis sputum is the main agent in the conveyance of the virus of tuberculosis from man to man, and indiscriminate spitting ought therefore to be suppressed." Mr. Harold Swithinbank endorsed these views, and called upon municipality in this country to follow the rational policy adopted in New York, the chief Canadian cities, Sydney, and other places, by making the practice a penal offense. To this succeeded a motion by Professor Sims Woodhead of Cambridge and Sir William Broadbent, "That, in the opinion of this Congress, all public hospitals and dispensaries should present every patient with a leaflet on the prevention of consumption and should supply and insist upon the use of a pocket spittoon." A third motion ran "That voluntary notification of cases of phthisis, when accompanied by expectoration, has been attended with success and should be encouraged wherever the means exist to take the necessary consequent measures." Dr. Niven of Manchester showed that excellent results have followed in Brighton, Manchester and Sheffield, where such notifications exist. Cases were discovered early, and disease arrested. Professor Clifford Allbutt strongly approved of beginning the required reform in this way—voluntarily. On the proposal of Sir James Burdon-Sanderson, Bart., Regius Professor of Medicine at Oxford, and Sir R. Douglas Powell, it was agreed "That the provision of sanatoria is indispensable among the measures necessary for the diminution of tuberculosis," especial reference being made to industrial centers. Another resolution proposed the establishment of a permanent international committee to keep the public everywhere informed of the progress made and the measures adopted to combat tuberculous disease, while Professor Crookshank and Dr. Theodore Williams affirmed that the overcrowded, dark, ill-ventilated dwellings and insanitary conditions of the working classes favored the spread of contagion. Professor Brouardel and Professor Calmette obtained a vote in favor of antituberculous dispensaries, to which the working classes could repair for assistance at the very beginning of the disease. Finally, the Congress, at the instance of Professor Robin and Sir William Broadbent, suggested that for the next meeting of this kind inquiry should be made into the predisposition of individuals to forms of tuberculous disease. These resolutions all of which here passed unanimously may be taken as embodying in themselves the substance of the work of the Congress.

The entertainments in connection with the Congress have been as successful as the scientific proceedings except during the last two days when a tremendous thunderstorm followed by cataracts of rain turned the town into a flooded sewer and the country into a swamp. This necessarily ruined many of the out-door functions—garden parties, excursions, etc. The greatest entertainment of all, however, is yet to come. This is a grand pyrotechnic display which will take the form of a shower of honors and decorations. Every one who has had anything to do with organizing the Congress expects to be made a Knight at least. In such circumstances it is most prudent to treat oneself on the non-expectant method embodied in the ninth Beatitude: "Blessed are they which expect not, for they shall not be disappointed."

SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Sixty-Ninth Annual Meeting, Held at Cheltenham, July 30, 1901.

FIRST DAY—JULY 30, 1901.

President's Address.—Dr. George Bagot Ferguson read an address on "Scientific Research as the Indispensable Basis of All Medical and Material Progress." He first welcomed the visitors to Cheltenham and spoke of its location, its reputation as a health resort, gained by reason of the saline springs that abound in the neighborhood, and also referred to the medical men of the district who had become more or less famous. He then took up the subject in hand.

The Foundations of Medicine.—"*Homo sum, humani nihil a me alienum puto,*" and this sentence of Terence may well be taken as descriptive of the modern practitioner of medicine. Is there nothing revolting in medical and surgical training and practice, in the year of dissection so wisely exacted from every medical student, in the indispensable work of the deadhouse, in the examination of patients, and in many operations of surgery and obstetrics? There is much, no doubt, repulsive at first in our professional education, but the cheering thought of doing service to common humanity

removes the feeling of abhorrence that would otherwise overcome us. As we for others, so others willingly for us; for sooner or later the medical man himself must seek the help of his fellows. Age, infirmity, mortal illness must come to him too in his turn, and so during his days of activity he must shrink from nothing which is repulsive and hesitate at nothing which is disagreeable, if only he may know more fully and act more precisely. *"Homo sum, humani nihil a me alienum puto,"* is the most inspiriting and the most comforting of mottoes.

Man's body is our chief care and study, its anatomy, its physiology, its diseases and injuries. Of anatomy we may say that it is the indispensable basis of medicine and surgery, and it can be honestly stated that there never was a conspicuously successful practitioner who was not a good anatomist. To the younger members of the profession it should be said, Never lose your grasp of anatomy, dissect whenever you have the opportunity, and as regards your anatomical manuals *"Nocturnâ versate manu, versate diurnâ."* Physiology teaches us that which is in accordance with Nature, and if we would recognize that which is abnormal or diseased, that which is pathological or contrary to Nature, it follows that we must ever keep before our eyes the physiological standard, the normal processes, reactions, and chemistry of the human body. Then of diseases themselves or variations from the normal we may recognize that many are essentially derangements of function, such as catarrh, anemia, diabetes, gout; whilst others are due to true anatomical changes, such as chronic Bright's disease, atheroma, hemiplegia, valvular disease of the heart, and cirrhosis of the liver. Others, again, like anthrax, phthisis, glanders, typhoid, tetanus, and diphtheria are due to parasitic invasion. Indeed a division of diseases may be made into anatomical, physiological, and parasitic; the last including tumors, of which the malignant or infective are especially parasitic. Degenerating from their high pkosition in the scale of being, some of our connective tissue or endothelial or epithelial cells, as the result of malnutrition (as Sangalli asserts), or of irritation, or under the influence at first of some specific organism (some blastomycete) as Thoma, Scheurlen, Korotneff, Russell, Sanfelice, and Roncali have asserted, comport themselves somewhat as the yeast fungus, itself a blastomycete, in a suitable medium would do, growing ever and working never (as Adami suggests), and soon, unless the surgeon interposes quickly and boldly and removes root and branch the malefic colony, the whole body becomes contaminated by the animal fungoid, which soon destroys its life. However numerous the departments of medical science may be—and we have thirteen represented at this meeting—anatomy, physiology, and pathology, being the true foundations of medicine, should always occupy a very large share of our attention.

One Hundred Years Ago.—Dr. Ferguson then dwelt upon some of the medical workers of the past two centuries, sketching in brief the salient truths brought out by these masters of medicine.

Scientific Research and the Present Medical Standpoint.—He said that in looking over the important facts in medicine that stand out through the century one is struck by the fact that the so-called practical man is never heard of, but that the biological dreamer is the man who has made most of the lasting discoveries. It is true that the practical man is indispensable, but he is not like the great biologist. The cell theory, for example, lies at the very foundation of modern medicine, and this theory certainly originated entirely with the biologists. The cell nucleus was actually seen and drawn by F. Bauer as long ago as 1802, though it was not before 1831 that it received that name from Robert Brown, the botanist. Little notice, however, was taken of the subject before the publication of Schleiden's paper on Phytogenesis in *Müller's Archives* for 1838, in which he asserted that "every plant is an aggregate of individualized, independent, separate beings—namely, cells." Theodor Schwann, also in the next year, made a similar assertion regarding animals in his *Microscopical Researches*, of which, and of Schleiden's paper also, the Sydenham Society published a translation in 1847.

Next came Hugo von Mohl in 1846, who recognized what we now call protoplasm in the cells of plants; the identity of which with a similar substance in the cells of animals was soon afterwards proved by Cohn and Remak. To Schwann a cell without a wall and a nucleus was no true cell, but Leydig in 1856 adduced pus and mucus corpuscles as instances of wall-less cells, and so step by step the ground was cleared for the now historical cellular pathology of Virchow, which influenced so profoundly the medical thought and practice of forty-three years ago. To Virchow as to Schwann a cell wall was a necessity, though this idea was soon afterwards dispelled by Lionel Beale and independently by Max Schultze in 1861. To Max Schultze we owe not only the extension of the term protoplasm (the bioplasm or living matter of Beale) to the contents of animal cells also, but the best description of an animal cell, namely, that it is a protoplasmic mass containing a nucleus; though even this last, we may add, is non-essential. All this work on the cell theory gave the original inspiration to Pasteur, and Pasteur leads up to Lister, of whom it is not necessary to speak, for he needs no speech, though he might well say of himself, *Quæ regio in terris nostri non plena laboris?*

Bacteriology, roentgen ray work, the study of antitoxins, animal extracts, ophthalmology, the advances in scientific chemistry and in the

study of parasitic diseases, in turn were discussed and their futures suggested.

More Universities and Research Institutions Needed.—The progress of pure science means medical progress also, and that it is to the men of pure science that we must still look to hold aloft for us the torch of progress. It is to be hoped that in the great advances still to be made Great Britain and Ireland may play their worthy part; but this will not be unless some improvements are made in their educational arrangements. As the result of several recent Augusts spent in many of the Continental capitals, he had been struck with the thoroughness and scientific spirit everywhere there manifested; being very different from the antiscientific spirit which characterizes most of the wealthier and more cultivated classes in this country. This antiscientific spirit is only eradicable by the better education of the young. To what other cause can we ascribe the fact that although the aniline dyes were discovered in 1858 by an Englishman, Dr. W. H. Perkin, yet almost the whole of their manufacture is now carried on in Germany? The National Physical Laboratory and the Jenner Institute of Preventive Medicine, have been established, the former in principle, the latter in reality, thanks to the splendid munificence of Lord Iveagh. New colleges, universities, and technical schools have been started, and some 15 to 17 research scholars are appointed every year, one-half of whom proceed at once to Germany to make their researches! What has been done, however, is as nothing to what ought to be done. The defences of the empire must not be overlooked, but of what avail will be those defences, if trade is gradually lost, for want of exacter knowledge? For trade and medical progress, and those very defences themselves, rest entirely upon progressive science.

But the cost? It would be as nothing in proportion to the gain, and a Faraday, a Koch, or a Pasteur would be a cheap purchase at a million. Whereas France, Germany, and the United States educate at their universities approximately one student in every 1,500 of the population, we in the United Kingdom are content with less than 1 in 2,000. Whereas Germany spends £753,000 a year on its twenty-two universities and France £740,000 a year on its sixteen, Great Britain and Ireland are content with less than one-fifth of that amount, namely, £135,339 among seven of their thirteen. Although the Leland Stanford, Jr., University of California has received no less than nine millions sterling from private munificence, and many others of the 480 American universities and colleges have likewise received huge sums—the Chicago University £2,000,000, the Johns Hopkins University £1,400,000 and the Cornell University over £1,000,000—no such general largesse is to be expected from British millionaires. The help must come from Government, supplemented by local contributions, or it may not come at all. Yet the matter is one of life or death for the country, for more and more every year the victory in every department, and the predominance in arts and trades, will pass to the possessors of the latest knowledge, the deepest science, and the most perfect and most economical processes. It cannot but be believed that this great need will soon be remedied, and that at the cost of a few battleships real universities of teaching and research, like the new University of Birmingham, will be established in every large town, and technical and research institutions—there are twenty-five of these in Germany and forty-three in America—in most of the smaller ones. At present we are feeling keenly the competition of America, a competition that is not likely to diminish, for it possesses over 100 schools of chemistry, and has 10,000 students of engineering. This competition we can only hope to resist by imitating the foresight, generosity, and enthusiasm for science of the American Governments and of the American men of wealth. Examinations are of secondary consequence. China is the most examined country in the world, and look at it. Original work done under the professor's eye and at his suggestion is far better than any examinations, and the true ideal of a real university must always be in the words of Paulsen, "True knowledge from free research." Let us hope that we shall not have long to wait for many such universities, where the best and most practical scientific education will be open to all at low cost, as in the University of Michigan, where the fees do not exceed £7 a year, or at no cost at all, as in the State of Massachusetts, and in many of the Western States of America. It is not trades' unions and skilled workmen that can insure the continued prosperity of a nation, but the trained intelligences that direct its energy; and we may rest assured that whichever nation shall elevate highest the general standard of education will be the nation which will lead the world. Since the preceding section was written I have to record the magnificent generosity of Mr. Andrew Carnegie, with his gift of £2,000,000 to the Scottish Universities, one portion of it to be applied mainly to the teaching and endowment of research, and the rest to replace the fees hitherto paid by their students. Happy Scotland! that not only receives about one-third of the whole parliamentary grant for university education, but has found besides such a princely and far-seeing benefactor as Mr. Andrew Carnegie.

Aspiration, Ethics, and Conclusion.—And now for a few concluding words about the aims, the aspirations, and the ethics of the profession. After a long and expensive education, after knowledge acquired laboriously and at great personal risk (the clergyman's death-rate is 16 per 1,000, the lawyer's 20, and

the doctor's 25) the medical man must not hold himself too cheaply. He is the heir of a long tradition, originating from the sages of India and from the temples of Greece. Our health and happiness are in his hands and the issues of life and death tremble often upon his judgment. So he must bear himself with confidence and proper pride, remembering his great traditions and the antiquity of his calling, which ranks next to that of priest. He is worthy of his hire, and that hire should be such that in the day of his popularity he may make due provision for his age and retirement and for those whom he will leave behind him. He must work hard and read and think all the days of his practising, for the best practice of to-day will not be that of even five years hence. His aspirations must be for the very best in each department of practice, for the progressive advancement of his art, and for the increased dignity and consideration of his calling.

Above all, let him be chary of any commerce with the enemies of science. *Magna est Scientia et prævalebit.* None the less serious is his responsibility who, knowing its benefits, yet retards its progress, or who ignorantly would deny to others what he is insufficiently instructed to understand for himself. Beware of panaceas. There are none in truth, though the worship of Panacea was not confined to Ancient Greece, and is as reprehensible in the cold clear light of twentieth-century science as is the equivalent assumption by too many specialist omniscience.

The wise practitioner will strengthen his position, as he will certainly increase his knowledge by somewhat frequent consultations, and he will do well if, like Hunter and Jenner, he cultivates some extraneous intellectual interest to relax occasionally the stress of his anxious labors. I venture to think that nothing will do him more good than the pursuit of one or other of the arts, or of some branches of biological or physical distraction, be it zoology or botany, electricity or telescopy. The wise practitioner, moreover, will confine his studies within certain limits if he wishes to attain to a thorough knowledge of even some portions of his great subject. He cannot be a universal specialist. The good and worthy practitioner will never be wanting in sympathy. Too often there is physical pain to be relieved, and, thank God, it can be relieved; though at other times the sufferings will be nervous rather than physical; and these are the occasions when sympathy and patience are most needed, though it is not always easy to show the first and to retain the last in the interest of some nervous sufferer on a cold wet night at 3 a.m.! In respect of medical ethics the case is very simple. Treat and think and speak of your brother practitioners as you would wish them to treat, and think, and speak of you. Medical ethics are, indeed, so completely summed up in this single sentence as to make it quite unnecessary for me to say more. With high aims and aspirations, with true ethical, that is to say, brotherly feeling, and with constant consideration for the public weal, we shall each and all be worthy of the well-known description in Chaucer, and be "veray parfit practisours."

Address in Surgery.— Sir William Thomson presented an address on some "Surgical Lessons from the Campaign in South Africa." The weapons of war have been entirely revolutionized during the past fifty years and the advent of the modern small-bore rifle has introduced into military surgery a large number of entirely new problems. The war was essentially a war of small arms; and so far it would seem as if all the improvements in them have not added to their immediate destructiveness. But this conclusion would not be entirely justifiable. The weapons are more accurate and of greater range than have been employed before, and given the same conditions of closer quarters and the formation of troops as formerly, opposed men, armed with breech loaders and using magazines, must inflict terrible damage. We have had some instances of the result in this campaign. What has happened is that we have learned to diminish the effect of the fire by making considerable intervals between the men; so that there is much less damage from loose unaimed firing than if the enemy had huge blocks of human beings for targets. If we add to this the fact that firing begins at a range of 2,000 or 1,500 yards; that the very light bullet is subject to the deflection caused by varying densities of atmosphere and force of wind, all conducing to inaccuracy of shooting, we have some reasons why the efficiency of modern rifle fire under certain conditions has so happily disappointed our anticipations.

The Effect of the Small-Bore Bullet.— When, however, we come to consider the nature of the wounds inflicted by the two classes of weapons the difference is very great; and this depends mainly upon the character of the bullet employed. The old flint lock had a ball nearly seven-tenths of an inch in diameter, the Minie rifle of the Crimean war one of six-tenths, the Enfield of five-tenths, the Martini-Henry of four-tenths, the modern small bore represented by the Lee-Metford is about three-tenths, and the Mauser is a decimal smaller. The bullets in the first group were all of lead, and elongated, with the exception of that of the old musket; the bullets of the second group, however, which may be likened to an inch and a quarter of ordinary lead pencil, are encased in a hard cupro-nickel case, somewhat pointed, polished, and absolutely smooth. The vast majority of wounds received in South Africa were caused by these bullets. It is certain that the enemy used other varieties; some-

times the soft-nosed sporting bullet, which, having an end of exposed lead, spread out on impact and inflicted a lacerated wound. Explosive bullets for big game have been found on prisoners; and the old Martini rifles were used with considerable freedom. In other instances the mantles were split at the top so that they expanded on impact. But it was not always possible to identify the effect as due to a missile contrary to the usages of civilized war. There is a popular belief that an elongated bullet must hit its object practically at right angles if that object is upright when presented to the line of fire. But between the discharge of the bullet and its arrival at the mark, a great many things may happen. It is often deflected in its flight, or it may be turned by clothing or other substances, and make its impact at all sorts of angles, causing large wounds. Sometimes the Mauser bullet has turned completely around and entered base forward. But a great number strike the ground, or a stone, and become much more formidable in their effects. This ricochet produced many kinds of deformities in the bullet; the case was often torn off wholly or in part, and, when the primary contact occurred close to the body spattered the skin about the entrance wound with small fragments of the cupro-nickel mantle. Now and again the exposed lead mushroomed and produced ghastly lacerations. But the result of a bullet striking soft parts sideways after a ricochet often made it difficult to believe that it had not contained a bursting charge.

Wounds of Soft Parts.—The large number of those wounded in the soft parts who recovered was a matter of surprise. This result was due to at least three factors, namely, the bullet itself, the early application of the dressings and the climate. The bullet seems to cleave the tissues rather than tear them apart; the early aseptic dressing and the high temperature and dry air; these were the main causes.

Wounds of Bones.—In the treatment of compound fractures of the femur the lesson that was learned was that conservative treatment gave by far the best results. Amputation of limbs was quite the exception, and was only done when the case was otherwise beyond hope. For the lessons of modern surgery, the vast possibilities of recovery which the teaching of Lister had put within the grasp of every practitioner of the art in the world, had already proved that the nearer we could approach the natural conditions the greater the safety for the patients. Therefore when a bone was broken by a bullet, and there was no other lesion but the track made through unimportant soft parts, the indication was to apply an antiseptic dressing at once, to secure as much immobility as possible, and to have the patient sent to a place where rest and more deliberate attention could be had.

Perforating Wounds of Abdomen.—On the whole, considering the difficulty of diagnosis in many instances at the outset, the fact that intestines may be found unwounded, and if wounded may be occluded by natural processes if not interfered with, it seems that in war as we stand at present the man whose abdomen is perforated by a small-bore bullet has a better chance of life without operation than with it, bearing in mind the circumstances on the field under which laparotomy must be performed. That is an opinion which most surgeons came to when experience had ripened after the early months of the campaign. Although the judgment may be a little humiliating it is one which must for the present be accepted.

Progress Made by Military Surgery.—We have seen a marvelous proportion of recoveries from severe wounds, and we have been able to rejoice at the great reduction of suppurating cases, and the practical absence of such infective diseases as tetanus, erysipelas, pyemia and hospital gangrene. This great difference in the record of to-day as compared with those of older and more bloody wars does not depend mainly upon the alteration of the bullet used. That, as we have seen, can do fearful things to a dense obstacle, and add to its power for mischief by the laceration caused by bony fragments which it scatters in impact. To some extent, the smallness of the canal made by it helps toward recovery. But, above all, the results are due to the treatment of the wounds by the surgeon, and the operation of those great principles which have developed under the splendid genius of Lord Lister. He has made possible the unquestionable triumph of conservative treatment. Honored as he is throughout the whole world, proud as we all are to claim him as a compatriot, his most enduring memorial will be in the multitudes whom he has been the means of saving from pain and death, and in the direction which he has given to scientific surgery for all time.

Pervading all the work in modern military surgery and principles first enunciated by Lister are manifest and to rigorous asepsis and antisepsis are due the good results.

When the recoveries from wounds in this war are made up and analyzed, it will be seen what a tremendous progress has been made in protecting the injured from disaster, even in the face of all the difficulties of the battlefield. For, while in the general and stationary hospitals the precautions necessary in modern surgery can be observed, it is, after all, at the initial stage that safety from sepsis is to be secured. "The fate of the wounded rests in the hands of the one who applies the first dressing," wrote Von Nussbaum, and the truth of this assertion has been proved every day.

(To be Continued.)

BRITISH CONGRESS ON TUBERCULOSIS.

(Continued from page 199.)

State and Municipal Control of Tuberculosis.—Sir Herbert Maxwell spoke on this subject after welcoming the delegates. He spoke of the necessity of notification of tuberculosis and of the desirability of a preliminary education, especially of the lower classes, in the general fundamental ideas of the contagion in this disease. He pointed out the difficulties which legislators had to meet and emphasized the necessity of going slowly in all measures requiring legislative enactments. When the people realize that the mortality has been reduced from 38 per 1,000 in 1832 to 14 per 1,000 in 1894, and that tuberculosis still stands responsible for the greatest share in mortality than all the other infectious diseases put together, public opinion will soon array itself on the side of the sanitarian. He also touched on the subject of legislative control of buildings, holding it desirable that certain restrictions regarding the construction of dwellings, etc., should be enforced.

Mortality from Phthisis in England and Wales.—Dr. John Tatham, of the General Register Office, presented a series of statistical studies covering the past forty years. With very few exceptions, his tables showed that for all ages there had been a decrease in this time; this rate of decrease had varied widely, however, being much greater for females than for males. Apart from many aberrant conditions, the general figures showed a mortality of 2,579 to 1,521 per 1,000,000, as this decrease in males and from 2,774 to 1,141 per 1,000,000 in females.

Social Status, Food and Paternal Age.—These factors were discussed by Dr. J. von Körösy of Budapest. Among occupations, printers showed the highest mortality, showing a percentage of 60; cutlers, 50; shoemakers, 49; dyers and millers, 49; joiners, tinkers and locksmiths, 48; masons, 46; laborers, 43; tailors, 42; bakers, and journeymen, 40; drivers, 37; domestics, 36; carpenters, 34; officials, 34; butchers, 33; merchants, 28; innkeepers, 27, and lawyers, 27. Capitalists seemed most immune, 10 per cent., and physicians showed an incidence of 12 per cent. Over 40 per cent. more deaths occurred among the poor. With reference to the food of children, when brought up at home, an incidence of 5.4 per cent.; if out, 8.9 per cent.; if fed at the breast, 5.4 per cent., and if nourished artificially, 9.5 per cent. On the question of paternal age, he showed that phthisis occurs most often among children of very young mothers, while the frequency diminished with middle-aged mothers and then rose again with mothers over thirty-five years of age.

Notification of Tuberculosis.—Dr. Hermann Biggs of New York showed what had been accomplished in New York, Buffalo and Washington. New York was the first city to encourage compulsory notification; later the State of Michigan, and the cities of Buffalo and Philadelphia followed. As a consequence of such notification and the hygienic activities put in use there had been a reduction of 30 per cent. in the mortality arising from tuberculous disease.

Voluntary Notification in Manchester.—Alderman McDougall of Manchester said that early in 1899 a scheme for the voluntary notification of phthisis was submitted to the Sanitary Committee and had been accepted by them. The necessity for a municipal hospital for tuberculosis was pointed out and the methods detailed by which thorough disinfection was carried out in the places of notification.

There was much discussion on the question of compulsory notification and a resolution was passed encouraging voluntary notification.

Tuberculosis of Childhood.—Dr. Léon Petit of Paris described the establishment of dispensaries for children throughout Paris. Much good had already been accomplished by these institutions. Dr. S. A. Knopf of New York read a paper on State Aid in Tuberculosis in Children, in which he advocated its extension. Childhood was a susceptible age. Tuberculous mothers, kissing, crawling on dusty, infected floors, trailing dresses in schoolrooms and general gathering places were among the factors dwelt on as conducive to infection.

French School Colonies.—Dr. R. Bompard said that the system of fresh-air outings for school children of Paris had proven of great benefit. Private enterprise had been supplemented by municipal aid and in Bordeaux, Lyons, Marseillès, Roubaix, Lille, Agen, Toulon and Paris, the system was in active operation. In Paris alone 4,000 children had benefited. The average length of stay was three weeks; the average gain in weight four pounds, and the average increase in chest measure about one inch.

Housing and Aggregation.—Dr. H. Coates of Manchester gave the results of an investigation of the presence of infective material in dwellings occupied by consumptives. Dust was collected in houses, obtained in the course of voluntary notification, and examined by biological methods. These examinations showed the constant presence of the tubercle bacillus in rooms occupied by phthisical patients. It was present in greater amounts and was more virulent in rooms shut off from air and sunlight. He then detailed the methods adopted to disinfect thoroughly the living-rooms which had harbored consumptives.

Dr. J. Robertson of Sheffield read a paper on the same subject which dealt with the factory, dwelling-house and workship problems. It had been amply proven that the air, light and ventilation of these places were not ample. Improvements, notably in the food supply, had been of help in the tuberculosis problem, but there was much more to be accomplished. In

workshops and factories, the amount of air space was much below what it should be.

This view was vigorously upheld by Dr. A. Ransome of Bornemouth who read a paper on the subject.

Air Supply of London.—Dr. T. Glover Lyon of London defined pure air, fresh air and vitiated air as the main types. Fifty years ago the air of London was perfectly good; at the present time, pure air was unattainable for the great majority. The present regulations of air supply for individual dwellings were considered distinctly inadequate and there was no provision made for ventilation.

Control of Meat Supples.—Dr. S. F. Murphy of London spoke of the difficulties of municipal inspection of meats with reference to tuberculous infection. The discussion brought out many expressions of opinion contrary to those of Dr. Koch.

In the Section on Climatology a large number of papers were read. Most of these dwelt on special features in places of local interest, more particularly to English and Continental physicians and are not here considered. Drs. Williams, Lannelongue, Achard Gaillard, Amrein and Hichens Zammit, Stephani, Jonnart and Guetschel read interesting papers bearing on climatology and tuberculosis.

Tuberculin in Human Tuberculosis.—A discussion on this topic was opened by Dr. Heron, who said that the remedy was a very valuable one and had fallen into disrepute because of the following factors: Its use in unsuitable cases, use of too large doses, neglect of temperature rule, increased dosage, and prejudice due to severe symptoms. He believed it to be a valuable remedy in the diagnosis of the disease.

Serum Diagnosis in Tuberculosis.—Drs. S. Aloing and P. Courmont of Lyons said that the serum reaction could be obtained with moderate regularity. It seemed to them that the graver cases gave a larger number of negative reactions. From a practical point of view a positive serum reaction was a sign of great value in favor of the existence of surgical tuberculosis.

Pretuberculous Manifestations.—Drs. A. Robin, E. Papillon and S. Bernheim read papers bearing on this subject. Dr. Robin thought that a careful study of the breathing capacity and particularly of the respiratory exchange would often lead one to a knowledge of the disposition to the disease and to suggest a hygienic régime to overcome such a tendency.

Dr. Papillon said that an arthritic tendency might reveal much the same thing. Dr. Bernheim spoke of the method of modifying the body metabolism so that a tuberculous soil, deficient in acidity might be converted into one with more acid. Chlorides and phosphates are wanting in the tuberculous soil and the frank arthritic patients rarely have phthisis. The meat cure was a means of adding acid to the body. He employs phosphate of creosote.

Lymph-Gland Involvement in Meningitis and Miliary Tuberculosis.—Drs. Haushalter and Fruhinsholz of Nancy showed that in 78 necropsies of children dying from miliary tuberculosis, 95 per cent. had tuberculosis of the tracheal and bronchial glands. Of 67 cases of tuberculous meningitis, 64 had affected glands. In almost every instance the origin of the bacillary infection which ended in the miliary and meningeal forms was in caseous tracheal and bronchial glands.

Variations in Morphology.—Dr. A. Moeller of Berlin discussed some bacilli which resembled the tubercle bacillus, notably the butter and timothy organisms, and went into details concerning their growth, characters and staining reactions, which latter features were dwelt on at some length by Dr. W. Bulloch of London.

Infectivity of Milk.—Dr. Lydia Rabinowitch of Berlin said that tuberculosis in cattle was responsible for the great increase of this disease among cattle and swine and that the milk was the most important item in this contagion. Tubercle bacilli had often been found by her in milk from sound udders; the tuberculin test was the only practical test to determine the presence of latent tuberculosis.

Immunity to Tuberculosis.—Dr. T. Yabé, of the Japanese Navy, reported on three bodies isolated from the tubercle bacillus, two of which, termed by him tuberculo-myco-protein and tuberculo-bactericidin, had the property of conferring immunity. He concluded that an immunity could be conferred, but as yet the substances were too toxic and had to be modified.

Tuberculosis in Animals.—A general symposium was held on this subject. Professor Dewar, opening the discussion, said that tuberculosis of the udder was present in about 3 per cent. of cattle and that a good tuberculin under proper precautions would give 90 per cent. of successful tests.

On the subject of the milk and meat supplies Messrs. A. W. Dollar and James King said, regarding the former, that the general interest in the subject had already resulted in satisfactory regulation of the milk supply in many countries; still an extension of the Bang system in stamping out tuberculosis in cattle was advisable. Mr. King said that tuberculosis in cattle was a cause of great loss to the farmer and to the meat-trader and that the home market suffers from American competition. The home cattle are more often affected with tuberculosis, because proper attention is not given them. This is in part due to economic reasons and partly brought about by ignorance. If farmers offered healthy cattle to the butchers, it is likely that the meat traders would not be so prejudiced against the home product.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, May 13, 1901.

The President, Robert F. Weir, M.D., in the Chair.

Gliosarcoma of the Base of the Brain.—Dr. Henry W. Berg referred to a case which came under observation at the Mount Sinai Hospital during the summer of 1900 and was recognized as one of cerebellar disease soon after admission. The patient, a man, gave the following history: H. H., a Russian, thirty-six years old; family history negative; had never had syphilis. A week before admission he began to suffer from severe frontal headache, chiefly localized over the right eye. Later he suffered from slight fever, dizziness and vomiting. He complained of great vertigo in walking, but there was no true ataxia. Patellar tendon reflex were exaggerated, especially on right side; eye muscles normal; face slightly flattened on right side, numbness on left side of face, and hyperesthesia of skin behind the left ear and over the left mastoid area. Optic neuritis was present. The patient complained of numbness on left side of face and sensation in this locality was diminished. There was slight titubation and staggering in walking, more frequently toward the left side than the right. The diagnosis at this time was a probable local lesion of the cerebellum, or base of the brain, pressing upon or involving the fibers of the left facial nerve. Upon the basis of local specific disease he was treated with iodides and mercurial inunction. Owing to the persistent vomiting, however, the amount of iodides which he could take was very much limited. On September 28th Dr. Sachs found slight lateral nystagmus and also some vertical nystagmus; both recti externi deficient; grasp of both hands, especially the left, weakened; diminution of sensibility to touch and pain on left side of face; slight ataxia in left upper extremity; slight cerebellar titubation; hearing on left side diminished. On October 5th the patient was transferred to the surgical service but died. Autopsy showed in front of the left lobe of the cerebellum, within the dura, a firm whitish tumor measuring about 4 cm. in all directions. The tumor lies on the petrous portion of the temporal bone, just over the internal auditory meatus. The pons is indented on its left side. The nerves at the base are pressed upon. Histological diagnosis, gliosarcoma. Dr. Berg said that almost all the symptoms by which the lesion was recognized and localized depended upon the interference with the functions of the left facial and auditory nerves and the characteristic symptoms of cerebellar disease.

Diagnosis.—Undoubtedly the most important symptom noted in this case, from a diagnostic standpoint, was the titubation or cerebellar ataxia. This is not an ataxia in the true sense, but rather a staggering in walking and standing which is one of the characteristic symptoms of cerebellar neoplasms, etc. The staggering of this patient was to either side and was of the variety of cerebellar ataxia which Bruns believes to be due to a lesion of tracts of fibers passing from the brain through the superior peduncles of the cerebrum to the cerebellum, and thence through the inferior peduncles to the spinal cord. For the most part these tracts pass through the processus vermiformis. Many cases are on record, however, of small tumors of the hemispheres of the cerebellum in which the vermiformis was not involved, and yet in which typical cerebellar ataxia occurred; while, on the other hand, lesions of the vermiformis have been reported in which cerebellar ataxia was absent. In the case under discussion the tumor only compressed the left hemisphere of the cerebellum and did not affect the vermiformis even indirectly. From the presence of cerebellar ataxia, therefore, we can infer only that there is cerebellar disease, without attempting, from this symptom alone, to localize the portion of the cerebellum involved. There was at no time convulsions, either of a general type or localized. This is the rule in cerebellar tumors, which in this respect present a marked contrast to tumors of the cerebrum. The hypersensitiveness of the skin behind the ear and over the mastoid was an extremely interesting symptom, and may have been due either to an irritation of the sensory fibers of the trigeminus, or, more probably, directly to the growth of the tumor. This localized hypersensitiveness, together with the deafness and temperature, led Dr. Berg to suspect at first an abscess of the cerebellum secondary to mastoid disease. The fact that the abducens was paralyzed appears to point to direct pressure on the sixth nerve, and this paralysis, therefore, like that of the facial and auditory nerves, was an aid to the localization of the tumor.

Surgical Aspects of the Case.—A paper on the surgical aspects of the case by Dr. Howard Lilienthal was read by Dr. Berg. Craniotomy was performed. After incision of the dura, about three drams of fluid were withdrawn by aspiration. Exploration with the grooved director revealed nothing, and the forefinger was cautiously inserted for nearly two inches, but without meeting abnormal resistance. A considerable piece of the cerebellum which had been forced out as a hernia was then ablated. The patient died from shock eighteen hours after the operation. Dr. Lilienthal said that, in view of what was found postmortem he had concluded that under similar circumstances (an accurate localization having been made during the progress of the case), it would be wisest to persist in the search for a palpable lesion, even though a very considerable portion of the cerebellar substance had to be sacrificed.

Implication of the Vermiform Process Necessary for the Production of Cerebellar Ataxia.—Dr. E. D. Fisher, after describing a case in which, although it was under observation for a considerable period, the diagnosis, owing to the obscurity of the symptoms, was made only about a month before death, said that his observations had led him to believe that when there is a destructive lesion of the cerebellum the staggering is away from the side of the tumor, and when there is an irritative lesion, the staggering is toward the side of the tumor. Some years ago he made a series of experiments on dogs and monkeys which seemed to demonstrate this completely. Again, he had become convinced that staggering would not occur unless the fibers of the vermiform process were affected. He agreed with Dr. Berg that the involvement of the cranial nerves fixes absolutely the side on which a cerebellar lesion is located.

Atonia as Important a Symptom as Ataxia.—Dr. M. G. Schlapp described a case at the Presbyterian Hospital, which came under observation in December last, in which the tumor involved the right lobe of the cerebellum. The patient was a little girl, nine years old, who had been blind for a month when first seen. Among the other symptoms were headache, vomiting, deafness in the right ear, staggering toward the right, atony of the right arm and leg, and general weakness of the right side. Dr. McCosh operated and the patient survived for about ten days. Dr. Berg had stated that nystagmus was caused by pressure on the corpora quadrigemina, but he thought it much more probable that it was produced by affecting fibers from Deiters nucleus. Dr. Berg did not lay any stress on atonia of the body, but he believed that it was just as important as ataxia in the diagnosis of cerebellar disease. He also took issue with Dr. Fisher as to the effects produced by destructive and irritative lesions. Luciani's experiments were not in accord with those of Dr. Fisher, and the case of Dr. Berg did not verify his observations. It is the cases in which mixed symptoms occur which give rise to so much perplexity in regard to diagnosis.

BOOK REVIEWS.

UTERINE FIBROMYOMATA; THEIR PATHOLOGY, DIAGNOSIS AND TREATMENT. With forty-nine Illustrations. By E. STANMORE BISHOP, F.R.C.S. Eng.; President of the Manchester Clinical Society; Fellow of the British Gynecological Society. P. Blakiston's Son and Co., Philadelphia.

THE study and the treatment of fibroid tumors of the uterus have been almost exclusively in the hands of the gynecologists. The epochs of progress in this specialty have been marked by milestones indicating the proper estimate to be placed on the various pathological conditions found in the female pelvis, and determining for the gynecologist, for the general surgeon and for the profession at large which of the conflicting methods of treatment is best. Uterine fibroma is one of the pathological developments that have been subjected to careful and prolonged study and experiment, and, although we have not yet determined its incipient cause, we do know its histological and clinical history and are able to speak authoritatively regarding its treatment.

It is certainly becoming, therefore, that a special treatise should be devoted exclusively to the subject, and Dr. Bishop has produced a volume quite worthy of the theme. The aim of the author has been to present a practical work, rather than an exhaustive digest. Those who expect to find here a repository of all the extraordinary and curious manifestations of the disease will be disappointed. The anatomy, development and secondary changes are fully discussed and the author's position on various subjects is strongly fortified by appropriate and convincing cases. The gravity to the patient of the existence of fibroid disease is, as evinced by secondary changes and complications, strikingly set forth in the impressive details of a few actual cases that ran their natural course, *i. e.*, were not treated.

Whether the etiology will be found to reside in a micro-organism, in inflammatory changes due to infection, or in the development of embryonic structures is the question of the future. Into all the intricacies of etiological speculation our author does not go, but he sketches in a few, broad strokes the main features that may be capable of causing these growths.

In treatment the role of medicine is judicially discussed and the weight of authority for the use of the various medicaments carefully analyzed with final judgment negativing every one. Electricity is damned with faint praise, although, strangely enough, credit is given it for the control of hemorrhage. "It is absolutely useless, and may be very harmful in cases of edematous, calcareous, fibrocystic, sarcomatous, or necrobiotic fibromyoma and in all cases where there is concomitant inflammatory disease of the appendage it should be absolutely forbidden," says the author.

He is unequivocally in favor of operative procedure as the only justifiable method of treatment. To this part of the subject he devotes three chapters, describes in detail the various procedures, both of myomectomy and hysterectomy, and is fully up to date. Curettage of the uterus to stop hemorrhage the author condemns, as the injury done by it to the adjacent tissue and the capsule may render the tumor an easy prey to septic infection and its subsequent degenerative changes. Carcinomatous degeneration of fibroids the author declares impossible. The illustrations are not quite up to modern standards, but the book as a whole is worthy a place in every medical library.